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WHOLE
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THE JOLIET TOWNSHIP HIGH SCHOOL

THE Joliet Township High School was constructed during the year 1900–1, was dedicated April 4 and 5, 1901, and is devoted exclusively to secondary-school work.

The structure is located on Jefferson street, East; occupies a lot 210 feet in length by 135 feet in depth; is built of Joliet limestone, with Bedford Indiana stone trimmings; contains eighty-seven rooms, and will accommodate 1400 students in regular school work.

The architecture is Tudor-Gothic, and doors, transoms, windows, and furniture are made in strict harmony with this style of architecture.

The building is much like the letter E in shape, and contains two wings, between which is the part containing the assembly hall. Over this are the chemical, physical, and botanical laboratories, general lecture room, and motor room. At either side of it are the inner courts, and under it are the bicycle rooms, battery room, engineer's and janitor's rooms.

The hall floors, the stair treads, the wainscoting are all of Vermont marble trimmed with dark Tennessee marble.

As we enter the building from the west, we pass down half a dozen steps to the ground floor, where in front of us is the west court, on the north side of which are the conservatory, the door leading to the stage, and the large screened window

through which the fresh air passes to the fan. On our left is the physiographical laboratory, with recitation room, workroom, and storerooms. This laboratory is twenty-five feet by forty feet, and contains six tables, each accommodating four students. These tables contain a series of five lockers, so that five different divisions may be instructed, and yet keep the apparatus separate. The table tops are made of two-inch pine and are specially prepared so as to prevent the action of acid upon them. Revolv-

PHYSIOGRAPHICAL LABORATORY

ing chairs are used by pupils at these tables. In another part of the room are found the teacher's private desk, a large demonstrator's table on which are found the keyboard for pupils' keys and lockers for apparatus. This table is supplied with gas, water, electricity, steam, compressed air, steel standards, etc.

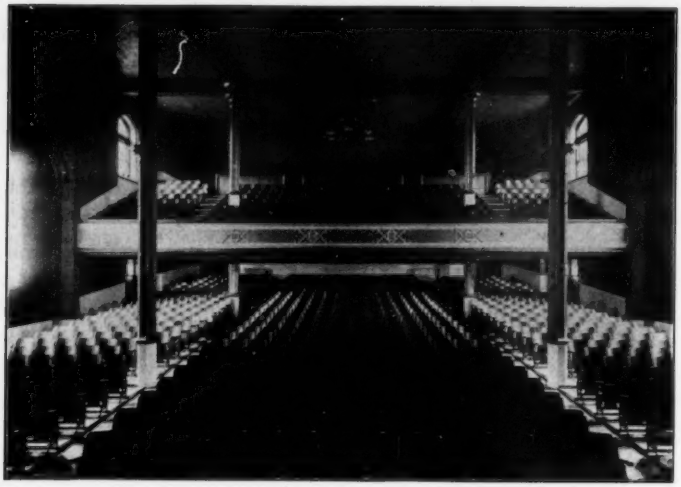
The assortment of maps and globes is complete, individual globes being supplied to pupils. Two library globes and a large relief globe are furnished for general use. There are also a full set of qualitative relief maps of the continents; several quantitative relief maps of selected regions, provided for precise work; two complete sets of physical wall maps, mounted on spring

rollers, and arranged on a special map rack suspended from the ceiling, so that the maps may be easily viewed from any part of the room. Contour maps are supplied in sufficient numbers to accommodate each pupil with a copy. These maps are not only of the United States as a whole, but also of many selected regions, chosen to illustrate the details of all typical land forms. These maps are supplemented by pictures of geographical interest.

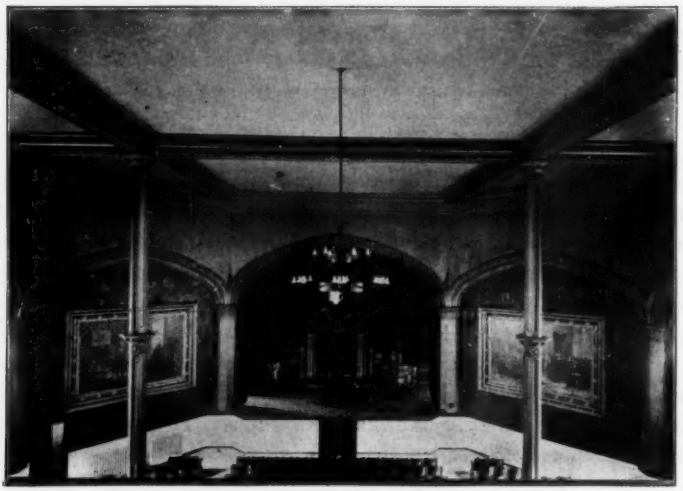
Among the apparatus here one may see a surveyor's outfit for practical field work, aneroid and mercurial thermometers, barometers, thermograph, psychrometer, rain gauge, convection and heat-angle apparatus, making possible a detailed study of the atmosphere. A dozen students' sets of minerals and rocks, together with samples of soils, help the student to determine the connection between the various materials that he finds on his field trips. The recitation room for this work only is across the hall, and is equipped in a way commensurate with that of the laboratory above described.

Passing from the physiographical laboratory down the spacious hall, we find on our right a drinking fountain, and on our left the boys' toilet room with individual, ventilated, combination lockers of sufficient number to accommodate all the boys seated for study in rooms on the ground floor. As we go on, study rooms accommodating about forty pupils are found on our right. As we near the main entrance on Jefferson street, we pass the bulletin board with a pilot light above, the boys' bicycle room, battery room, containing cells which control bells, clocks, and telephones. After passing the main entrance, we find to our right the vault room, in which are kept the records of the board of education, and, on the left, the entrance to the boiler room. East of the entrance to the boiler room are the girls' bicycle room and their bulletin board, and at the east end of this hall are found the girls' locker room and toilet room. The outdoor gymnasium for boys is entered by a door near the foot of the east stairway.

Going up the east stairs we come to the commercial room on our right. On our left, as we pass down the hall, are pupils'



ASSEMBLY HALL



STAGE

study rooms, and on our right, midway down, is the building directory. Now we reach the assembly hall. This room is built with inclined floors, and with balcony seats comfortably 1500 people. The stage is cleverly arranged with library setting, two dressing rooms for boys, and two on the opposite side for girls. Toilet room, self-draping curtain, pilot lights for orchestra, a speaking tube to engine room, a switch board controlling the two hundred incandescent lights, a gas regulator connected with the gas chandeliers, and a telephone complete the stage equipment. This room is seated with best five-ply opera chairs, and its acoustics enable an ordinary voice to be heard distinctly in any portion of the hall. Rosettes representing a combination of the Lancaster and York roses adorn the capitals and the two great arches on either side of the proscenium arch. A portcullis made of staff here and there forms a pleasing relief to the long balcony rail. This room is used for the weekly assembly meeting at 11:30 A. M. Wednesdays. At this time some one addresses the students. This room is used also for commencement, class day, literary contests, and all other public exercises. The hall presents a scene of dignity and elegance seldom seen in a public school-building.

Across the hall are the offices, with wainscoting and paneled ceilings of antique oak. The outer office serves both as a reception room and faculty room. In it is a central telephone directly connecting the superintendent's 'phone in the private office and each of the rooms where pupils study or recite. Any room may call up any other room in the building, or the superintendent may engage two rooms in conversation at once. A city 'phone is placed at the right of the building 'phone. Here is the master clock which regulates all the forty secondary clocks placed in the various rooms. The bells in all rooms are rung by it, according to the setting disk. This disk, placed in the master clock, contains a large number of holes arranged in circles. In these holes are placed steel pegs, at such points as to indicate the close of recitation periods. Bells ring in each room as soon as this revolving disk has made a contact. Periods may be made of five minutes each, or multiples of five. Near the master

ter clock is a board containing electric buttons, by which engineer, janitor, or assembly hall may be rung up. A single button ringing seventy-five bells serves as a fire alarm. A building keyboard, containing 1400 duplicate keys, is placed in the outer office.

The room for male teachers is on our right as we pass the offices, and at the end of the hall on this first floor we find the seniors' room, capable of seating 125 or more. We go up the west stairway, and at the top find the juniors' room of same size

MAIN OFFICE

as the seniors' room, both being designed to accommodate all of both classes and make these two classes to study where no recitations are heard.

In all the study rooms we find an abundance of elegant slate boards, electric light and gas, telephone, teacher's wardrobe, reference library, clock, bell, thermostat, prismatic glass in upper windows, two systems of heating and ventilation.

Following this hall we pass the boys' lockers and toilet room for this floor, and come to the special recitation and conference rooms in history and English literature. These are fitted up with tables and chairs, instead of ordinary school desks.

On our right, as we pass the balcony of the assembly hall, is the general library, and immediately connected with it are the aquarium and museum — a room fronting south and about seventy-five feet long by thirty feet wide. A large amount of desirable material has been presented and is classified in such a way as to be of great service in our science classes. At the end of this hall are a drinking fountain, girls' lockers, and toilet room. At the head of the east stairway are the basket-ball

MUSEUM

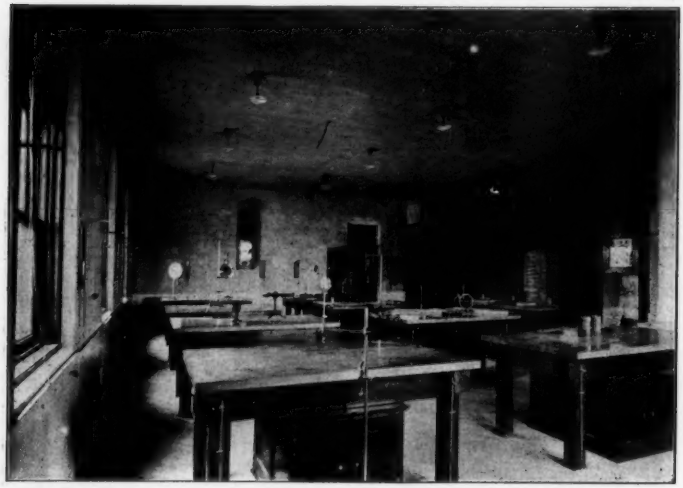
room and girls' gymnasium. When we have reached the next floor, we find the laboratories for physics, chemistry, and botany.

Seven rooms situated on the third floor are devoted to the subject of physics. They include the physical laboratory, the lecture room, the physics class room, one private laboratory, the photographic dark room, the dynamo room, and the mechanical room.

The physical laboratory is furnished with a demonstration table for the instructor's use and with eight tables for pupils' use, each accommodating four pupils.

These tables are of heavy oak, with maple tops; are furnished with lockers, adjustable supports, with gas and electric current. An abundant supply of water is provided in the room, and is easily accessible.

The room is furnished with stone shelves resting on stone brackets supported by the exterior walls of the building, thus furnishing a stable support for galvanometers, balances, and



PHYSICAL LABORATORY

other delicate instruments. All the metal used in the construction of this room is brass.

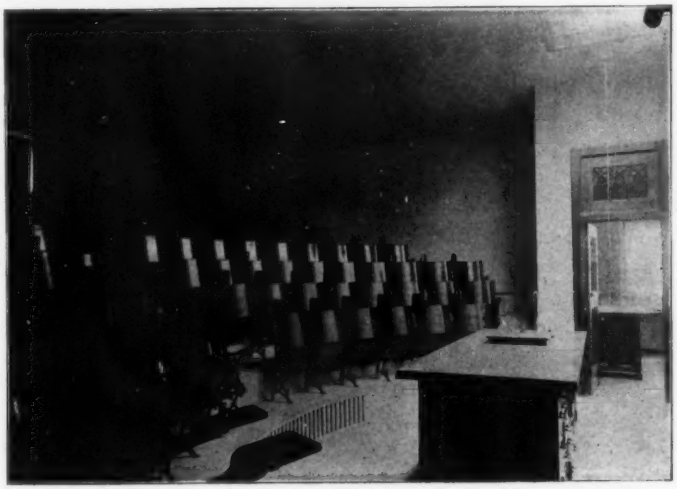
Specially devised, adjustable pendulum supports are installed permanently on the walls; also several sets of Boyle's law apparatus, a United States standard barometer, standardized thermometers, Kater's pendulum, and gauges for water, steam, gas, and compressed air.

The demonstrator's table is supplied with gas, water, steam, compressed air, and electric current, either direct or alternating of single, two-, or three-phase, and with pneumatic trough and steam siphon, fifteen lockers, and four keyboards for pupils' use.

A self-winding seconds clock, with adjustable automatic sounder and automatic circuit breaker, for exterior currents, is included in the equipment of this room.

In the center of the room is suspended an arc light with brass case and adjustable, focusing lenses for use in experimentation in light.

This laboratory is supplied with darkening curtains, permitting it to be readily converted into a dark room for photometric and other optical measurements.



LECTURE ROOM

The class room contains a demonstration table of the type already described, and thirty lecture-room chairs.

The lecture room provides seats for 100 pupils and is amphitheatered with a sharp rise between seats. A projection lantern for either solar or electric light, and with accessories for special work in optics, is here installed. A skylight furnishes abundant light for this room, and a dark curtain permits of converting this into a dark room with the expenditure of the minimum of time and effort. This room contains also a demonstrator's table of the type already described.

In the mechanical room are placed a work bench, an electric motor to drive a metal and woodworking lathe, apparatus for glass-working, stone shelves, and a preparation table.

The chief feature of the dynamo room is the rotary transformer which furnishes the basis of an exceptionally complete electrical equipment. This transformer converts a 500-volt current into a direct current of voltage ranging from two to 125 volts, or into single, two, or three-phase alternating current, as may be desired. It is a three Kilowatt dynamo of the Wood system, and is used exclusively for educational purposes. The controlling switches, field rheostats, voltmeters, and ammeters for both direct and alternating currents are installed in a case on the walls. The dynamo and motor are placed in a sand box, preventing the transmission to other parts of the building of any vibrations due to rotation.

A most complete system of wiring carries the currents from this transformer to every demonstration table in the building, to each pupil's table in the physical and chemical laboratories, to the assembly hall stage, and to the botanical and physiographical laboratories.

The distributing switch board for this system is placed in the physical laboratory, and is so arranged that both the front and back are readily accessible to the electrician or to the student. It is a model of neatness and mechanical skill.

All terminals end in cut-out boxes provided with locks with individual keys, insuring safety to inexperienced pupils. A complete system of fuses protects all parts of the system from any possible danger of damage.

In the dynamo room are also placed two lantern boards, each containing sixty 110-volt incandescent lamps. These, with a complete set of voltmeters, ammeters, wattmeters, dynamometers, and other electrical instruments, furnish the equipment for an advanced course now offered in electrical measurements and dynamo study.

In providing the laboratory apparatus for the first year's work in physics, it has been the purpose to place in the hands of each pupil of each section suitable and complete apparatus

for the performance of fifty quantitative experiments. This apparatus is now installed and in use, and is of as high a grade of efficiency as can profitably be used by students of the junior year of the high-school course.

All individual apparatus and the demonstration apparatus both for physics and chemistry are stored in dust-proof cases built permanently into the walls of the various rooms.

The chemistry department consists of three rooms situated

CHEMICAL LABORATORY

on the third floor—the chemistry class room and the chemical laboratory, and lecture room before described.

The class room contains a demonstration table of the type already described, and is provided with thirty lecture chairs for pupils' use.

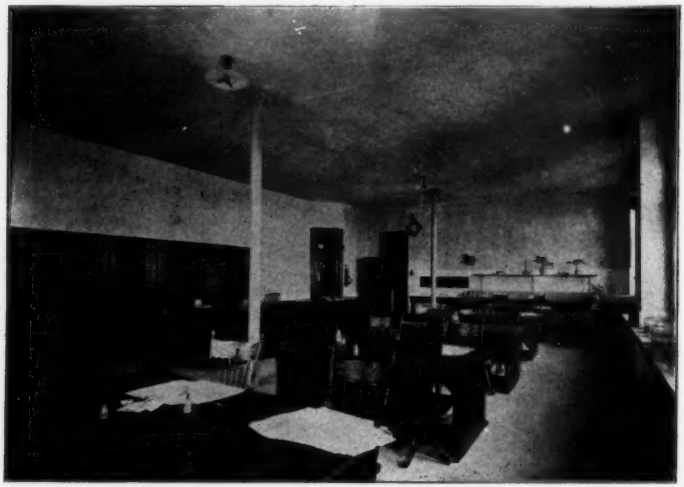
The chemical laboratory contains the usual demonstration table and four pupils' tables, each fitted to accommodate eight pupils.

The tables are of heavy oak with a plate-glass top resting on a corrugated rubber pad. Each pupil is provided with a pneumatic trough, a drawer and a closet under his own lock and key, for

the storage of such individual apparatus as is most frequently in use; also a rack for reagent bottles, a hood, gas, water, and electric current.

On a stone shelf occupying one entire side of this room are placed the rapid-weighing balances for class use. A number of analytical balances for more delicate quantitative work are arranged in cases easily accessible to the student.

An electric hot-plate furnishes a convenient means for evap-



BIOLOGICAL LABORATORY

orating liquids. Flues from this and from all other hoods convey all noxious gases through the top of the building.

The distilled water used in this and other departments is furnished by a Jewell water still, connecting with the steam-heating system of the building.

A complete outfit of chemical apparatus covering the field of high-school chemistry is installed and in use.

The biological laboratory occupying the northwest corner of the third floor receives light from the north and west windows, seven in number. The room is twenty-five feet by forty-five feet. It has six students' tables, one opposite each west window,

and one opposite a north window. There are also a teacher's demonstration table and a supply table, each having storage drawers and shelves. The laboratory room has five storage closets and one set of drawers. At the south end are three washbowls and a bivalve trough. Opposite the first west window is a set of overflow aquaria for plant and animal forms. Extending from this along the west wall is a slate-stone shelf, having gas, and two electrical cut-out boxes for experimental work.

The recitation room contains twenty-four chairs, storage cases extending along the north side, and a large herbarium cabinet located on the east side of the room. A door dropping down as a shelf between these two rooms allows material prepared, while a section is in the laboratory, to be placed in position ready to be taken by the next section on passing in.

The work is arranged to accommodate a maximum number of twenty-four in a section. The tables each seat four students, but contain twenty lockers, so that five sections may be provided with lockers.

Each pupil of a section has a dissecting microscope for the gross anatomy, and a compound microscope for the finer work. The latter instruments are the Bausch & Lomb continental pattern, with rack and pinion and inclined joint, two thirds and one sixth inch objectives, with a revolving nosepiece, and a one inch and two inch eyepiece. There is also a teacher's demonstration microscope with an Abbé substage condenser and a one twelfth inch oil immersion lens.

All apparatus materials are provided for individual work. Suitable glassware is provided for elementary physiological botany, and includes cylinders, beakers, thistle tubes, U-tubes, funnels, evaporating dishes, petrie dishes, and test tubes. There is a Harvard trip scale, and also a Kern balance for close determinations.

Apparatus support rods are countersunk in the student and demonstration tables. An abundance of aquaria jars and bell jars are provided, while staining and reagent bottles are at each table with stock reagent bottles in the storage closets. The

ordinary reagents and chemicals for the laboratory are kept in stock.

Preserved materials are kept in museum jars and wide-mouthed bottles. By means of the conservatory, work can be done in ecology in the building as well as work in morphology and physiology.

From the northwest corner of the biological laboratory a stairway leads to the observatory, where is installed the telescope. The room is large enough to accommodate twenty-five or more, and gives an opportunity for applying the laboratory method in the subject of astronomy.

The entire building is heated by one of three means, or by all combined, when extreme temperature may so require. These means are direct steam, pure air heated by steam in the master coil, or by both combined. Each room has separate heating and ventilating flues, so that if either is not satisfactory, it is possible to remedy the difficulty at once.

A thermostat, placed in each room, and regulated automatically, makes it possible to maintain a uniform temperature throughout the building. A fan, driven by a separate engine and capable of supplying 60,000 cubic feet of air per minute, forces into all parts of the building the pure air, after it has been passed through two strainers and has had all dirt and dust removed from it. The tunnels through which this air passes are hosed out once a week, and their cement floors kept clean and pure. The foul air is taken from the rooms by the same kind of flues as those which furnish the fresh air. A constant exit of foul air is made by having a steam pipe passed from each room through the flue to the roof. Live steam in these pipes creates a draft and takes care of the foul air.

All halls, cloak rooms, teachers' rooms, study rooms, laboratories, library, museum, etc., are lighted by gas and electricity. It has been the aim to have all study rooms lighted from one side only, and almost without exception this is true. The lighting has been made uniform and abundant by the use of prismatic glass. This glass renders it impossible to have any dark corners, so that the student seated farthest from the windows has the

same kind and the same quantity of light as that one seated directly by the window.

The shades over the prismatic windows roll down, while those on the lower windows roll up, making the control of the light's intensity easy for the teacher in charge of the room.

The special features of the building are: (1) toilet rooms, ventilated lockers, and drinking fountains, on each floor, at either end of the corridors, thus dispensing with the continual tramp, tramp, from one floor to another, to the toilet rooms and the cloak rooms; (2) the arrangement of the laboratories in such parts of the building as are most convenient for pupils, thereby causing the minimum expenditure of time in passing; (3) the complete equipment of all laboratories with the best apparatus obtainable in this country and abroad; (4) the arrangement and the equipment of an assembly hall, large enough and attractive enough to accommodate and satisfy both the student body and their audience, even when both have grown to twice their present size; (5) the general lecture room, with its magnificent equipment and capacity sufficient to accommodate one hundred or more for an illustrated lecture on any subject; (6) a telephone system, such as to make possible immediate communication between superintendent and teachers or between teachers; (7) a small reference library of well-selected books, adapted to the grade of pupils belonging in the room, thereby saving the time commonly expended in roaming over the building to consult the general library; (8) the equipment and arrangement of a museum so as to make it of practical use in the instruction of classes in physiography, geology, zoölogy, and allied sciences; (9) the outdoor gymnasium for boys, and the indoor gymnasium for girls; (10) the conservatory, so arranged and equipped that some practical work in ecology and forestry may be done; (11) the clock system, similar in arrangement to the telephone and of equal value; (12) the retiring rooms for male and female teachers, the marble hallways, and the open stair treads—the one insuring silence when pupils pass, the other securing to the long corridors abundance of light.

It has taken years of persistent, earnest work to develop a

school sentiment here which not only permits, but heartily indorses and supports, the construction of such an edifice. One of the city papers has called it "Joliet's Pride," and has made a button with the school picture on it, and a tablet also with the picture of the school. The city music teacher has written a march and dedicated it to the school, and so, with this universally kind feeling, the school has grown in a few years from 200 to 600. The building itself is not the result of one man's effort, but it rather represents, in its location, construction, arrangement, equipment, and growth, the combined wisdom and efforts of many.

The pilgrimages made to Joliet by school and college people, school architects, and boards of education from every section of the land bear some evidence of the success attending this effort of Joliet and her people.

J. STANLEY BROWN

JOLIET TOWNSHIP HIGH SCHOOL

CHARLES HOOLE, A SCHOOLMASTER OF THE COMMONWEALTH

HIS NEW EDUCATIONAL STANDPOINT

IT is very necessary and hath been ever wished that some of our most famous and best schoolmasters, would for the benefit of others set themselves on work, to find out and publish the exactest method of teaching which might be generally received, till a better were known; for by that means they should do much good to the Church and the Commonwealth.—*Charles Hoole in Scholastic Discipline.*

I conceive it will be no small satisfaction to parents and a mean to cease the indiscreet clamours of some against schoolmasters, to see what method they observe in teaching and how their children profit by degrees, according to their present apprehensions and growth in years.—*Charles Hoole in the Master's Method.*

In 1660 Mr. Christopher Wase, M. A., teacher of the free school of Queen Elizabeth at Dedham, in Essex, wrote *Methodi Practicae Specimen. An Essay of a Practical Grammar; or, an Enquiry after a More Easie and Certain Help to the Construing and Parsing of Authors; and to the Making and Speaking of Latin.*

In his epistles to the reader, Mr. Wase urges the desirability of the student understanding grammar and being able to pass on with ease and speed through the received authors. He says:

I find by a book newly published and come to my hand that a like design hath been contrived and successfully practised by Mr. Charles Hoole. I have reason to be much confirmed by the testimony of so worthy an author; whom, though by face unknown, yet from his translations seen by me and the preface to Cato's *Distichs*, I have honoured not only as candid and industrious, but acutely judicious in didactics.

Let us turn to Hoole's preface to Cato's *Distichs* and see the method so highly admired by the contemporary.[1]

The so-called (by Wase) preface is by Hoole termed: "An advertisement touching Cato and some other school-books translated by Charles Hoole." After speaking of his conviction that

[1] The *Disticha de Moribus* of Cato, together with the *Dicta insignia septem sapientum Graeciae* and the *Mimi Publiani sive Senecae Proverbia* are published in English and Latin side by side — by Hoole, 1659. They are given "whereby little children may understandingly learn the rules of common behaviour."

Latin can be as readily learned as French, and at any rate, more perfectly, if only the right method is adopted, Hoole lays down his first principle that school-work must proportion and adapt itself to the capacity of the child. Yet this cannot be taught, for it is of the nature of insight. *Scire quid deceat est caput artis quod nulla arte docetur.*

Assuredly, however, a minimum of grammar being known, it is sound teaching to lead the child to translation of authors. On certain days of the week the *Sententiae Pueriles* can be written out and learned by heart. These are "sentences for children . . . . for the first enterers into Latin." Hoole's selection of these sentences taken from the collection by Leonard Culman was published in 1658. Sentences are divided according as they contain two, three, four, or more Latin words. On other days, instead of the *Sententiae pueriles*, they are to learn to talk with one another from the *Pueriles Confabulatiunculae* or *Children's Talk* (published 1659) and Corderius's *School-Colloquies*. Minute directions are given as to the translation and retranslation into paper books of the *Sententiae pueriles* and of the analysis and reconstruction in talk of the *Colloquies*. Always there is to be a paper book at hand with grammar rules written after the manner of commonplace heads, and examples found in authors are to be placed under the rule. This paper book becomes a series of elegant extracts as well as of self-discovered examples. "It maketh the matter, words and phrases in every lesson their own, and stores them with copy and variety of both, to use upon any occasion. And this is it which Mr. Brinsley truly calls 'the very picking out of the kernel and the life of every lecture.'"

Hoole's defense of translations is very vigorous. His main points are: Little children are better employed in something practical, *i. e.*, in repeating and imitating something they understand. If the learner sees his own language there is so much more of what is known by which he can compare the unknown. They can get over so much more ground in reading authors with a translation rather than without. The translation ought to supply good English; the child's English is necessarily weak. (Hoole writes these books for children of 7 or 8 years of age.)

As to the manner of translating it can only be observed: Many men, many minds. "Some set down the English only, as Mr. Brinsley; some the English and Latin together, and that word by word, as Mr. Haine; or clause by clause as Dr. Webbe; or speech after speech as Mr. Bernard."[1] "I have endeavored," adds Hoole, "to frame my English style to the Latin so as at once to reach the author's true meaning, and to condescend to the capacity of a young learner." Accordingly Hoole has felt himself free to apply different methods at different times.

Hoole's main positions are therefore: (1) Children's capacities are limited and these must first be understood before work is set. (2) The intricacies of Latin grammar are too great for children, therefore it must be made as simple as possible. (3) Children cannot puzzle out the English of the Latin, therefore translations must be provided. (4) If translations are properly used, together with written and oral castings and recastings, there is an economy of time and trouble, in the end, in learning Latin.

As in duty bound, having complained of the tedious grammars then in use, Hoole wrote a Latin grammar tending to the schoolmaster's ease and the weaker scholar's encouragement in the first and most wearisome steps to learning. The book is named: *An Easie Entrance to the Latin Tongue*. It contains the testimony of two eminent schoolmasters concerning the author, which may perhaps here be quoted:

> Having had good and sufficient demonstration of Mr. Charles Hoole's abilities, for the teaching and ordering a grammar school: which I duly apprehend both from my conference with himself and by his writings tending to that purpose; and showing how maturely he hath considered and thoroughly weighed and judged of matters of chief concernment for that purpose; I do hereby certify all, who may desire notice hereof, that I conceive him to be a man of skill, dexterity and activity and many ways fitted for the governing and teaching a grammar school; and educating youth in all good literature for the university. In token whereof I have hereunto subscribed my hand. May 10, 1642.

[1] William Haine wrote Lilie's Rules Construed 1653; translated the authorized Latin Grammar; Dr. George Webbe translated the Andrea and the Eunuch of Terence 1629; Richard Bernard translated Terence's Comedy into English 1598.

By me Thomas Hayne,[1] late School Master of the City of London's School in Christ's church.

Idem testatur etiam Simon Humfrey Scholarcha Stamfordiensis.

To the *Easie Entrance* Hoole writes a preface by way of premonition to the learners of this book, and especially to children of the lowest form in a grammar school.

Hoole must have been a greater lover of children even than of grammar or he could hardly have begun as follows:

Children! It was for your sakes I undertook, and have now (by God's blessing) performed this following work; the scope whereof is (in a playing manner, and according to grammar-order) to acquaint you with the grounds of grammar and withal how to practise them; so to set you on in an intelligent course of construing, parsing, translating, writing and speaking Latin; that no difficulties may occur in after-learning which by a little direction of an able teacher, you may not cheerfully over-pass.

Hoole does not hesitate to treat the child as a reasonable being. He talks to him about the grounds of grammar, and enters somewhat minutely into the best ways of "getting" the grounds more easily. He takes the child-reader into his confidence with regard to the vocabulary, and gives such suggestions as the following:

You may take the opportunity once a week to dispute with some of your fellows, who can give the most Latin words under one and the same head; and this practice will exceedingly quicken your understanding, and confirm things in your remembrance. To ready you for finding any word (after once you have seen under what head it is placed) you have each several head set down in the top of your pages; and to let you see the coherency of words according to the nature of things you have a synopsis (p. 326).

After the vocabulary, Hoole draws attention to the sundry short examples applicable to the rules. Then, too, he has included collections out of the lowest authors, which will save books and give an insight into different Roman writers so that "you may pitch upon that which doth most delight you."

The other points on which Hoole lays stress, in this important preface, are "the more elegant expressions," which he inserts, to show differences between the English and the Latin, and the first principles of Christianity which are annexed "that

[1] Not to be identified with William Haine. Thomas Hayne wrote Grammaticis Latinae Compendium 1640.

by them you may learn what you are to believe and to do in the way to salvation." Hoole favors religious education, and even insists on it in this Latin grammar: "To train you up in Scripture learning, you must keep a constant daily course of repeating a verse by heart every morning and reading a chapter every evening at the school; and I hope your parents and friends will see that you dispatch this easy task at home." We shall see, further on, that other means of religious instruction were to be used.

On such easy terms is Hoole with children that he presumes to tell them that this book is concerning boyish matters suited to their capacity and he hints that learning this is a year's pastime, the reward for which will be a completer grammar. So reasonable does he think children that he writes thus suasively:

> One vocation or other will ere long call you from the school. And if you mean to undertake any commendable profession hereafter you must learn whilst you are at the school. Wisdom herself saith, I love them that love me and those that seek me early shall find me (Prov. viii, 17). It will be miserable for any of you to bewail himself hereafter and say, How have I hated instruction, etc. (Prov. v, 13, 14). Therefore, good children, do you now apply yourselves to get learning; make the grammar school to be indeed *Ludus Literarius* and the schoolmaster to become *Ludi-magister, i. e., Moderator ludi* (as the learned Romans were wont to name them in proper terms), so shall you never undergo the severity of the rod or ferrule; nor your master at any time be constrained to act that irksome drudgery of whipping.

So wrote Hoole in 1649, and in 1659 we find him still a believer in the "sweet reasonableness" of children. In that year Hoole translated the *Orbis Pictus* of the "reverend and singularly ingenious"[1] Comenius. On the title-page Hoole describes Comenius's book as "the most suitable to children's capacities of any that he hath hitherto made."

With much care, the grounds of his pedagogical belief are stated, in the preface to the translation. To understand things at all they must be distinguished from one another, and for this reason the names of things must be known. Comenius had devised his *Orbis Pictus* to consist of names of things in both Latin and the vernacular, both of which the pupil was to learn,

[1] CHRISTOPHER WASE, Preface to *Methodi Practicae Specimen.*

together with pictures of the things and a short written description. "Children being won hereunto and drawn over with this way of heeding may be furnished with the knowledge of the things that are in the world by sport and merry pastime."

Hoole takes the opportunity to reaffirm all that Comenius had written in support of his views. He says of the ordinary teaching of Latin Grammar: "We do teach children as we do parrots, to speak they know not what; we, taking the way of teaching little ones by grammar only at the first, do puzzle their imaginations with abstractive terms and secondary intentions, which, till they be somewhat acquainted with things and the words belonging to them in the language which they learn, they cannot apprehend what they mean." The remedy is: Adapt your teaching to the capacity of the child. Show him pictures with names in Latin and English underneath. Let him read the descriptions given in English, and then let him see the Latin equivalent. Then he is to learn by heart the description and to pick up the Latin grammar as he needs it to understand the passages.

Hoole mentions that he had himself had in mind writing such a work as the *Orbis pictus* whilst his own child was alive, but with the publication of Comenius's he desists from his own and translates that great man's book. Almost impassionately he addresses schoolmasters:

> You, then, that have the care of little children, do not too much trouble their thoughts and clog their memories with bare grammar rudiments, which to them are harsh in getting and fluid in retaining, because indeed to them they signify nothing but a mere swimming notion of a general term, which they know not what it meaneth till they comprehend also particulars, but by this or the like subsidiary (book) inform them first with some knowledge of things, and words wherewith to express them, and then their rules of speaking will be better understood and more firmly kept in mind.

Such a passage reads to us like a truism, but Hoole's was a generation which yet more than half believed that education consisted in scholarship, into which no child could enter, and that, however excusable his ignorance might be, yet childhood, by its lack of knowledge, was necessarily uninteresting and unworthy of consideration. These are memorable words in which Hoole

sums up his view, and as true today as in 1659: "It is *the very basis of our profession* (of schoolmaster) *to search into the way of children's taking hold, by little and little, of what we teach them.*"

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NOTE.— In the 1659 edition of Charles Hoole's translation of the *Orbis Pictus* is the following interesting announcement:

A PARTICULAR ADVERTISEMENT.

Whereas divers Gentlemen of good quality have been very earnest heretofore with Charles Hoole as well to Table as teach their Children; This is to give notice to all, but especially those of his acquaintance, that he is now fitted of an House and all things answerable to their meet accommodation, and will be diligent himself, and maintain an able Usher also in his House to attend their Teaching, and his Wife and her Servants, ready to see to their wholesome dyet, and cleanly ordering, upon a Rate answerable to so great a Charge and Pains, as are thereunto required. At the North-East Corner of the New Buildings in the Token House Garden in Lothbury, London. Nere the Royal Exchange.

AN INTRODUCTORY SCIENCE COURSE FOR SECONDARY SCHOOLS

THE proper sequence of scientific subjects in high schools is a question of steadily increasing importance, which seems to baffle all attempts at a satisfactory solution. It resolves itself into a controversy between the physical sciences on the one hand and the biological and geological on the other.

It is generally recognized that the physical sciences are much more fundamental than the other natural sciences. The former supply the majority of facts and principles on which the latter are based. Says Professor C. E. Bessey in a committee report to the Nebraska Teachers Association: "It is only a superficial knowledge of plants and animals which may be obtained without some aid from chemistry and physics." Much of the latter work must also be given before the pupil can understand the relation of the earth, sun, winds, rainfall, disintegration of rock, origin of limestone and rock salt, and other important chapters of physical geography. For these reasons the plea is frequently put forth that physics and chemistry should be studied before all other natural sciences.

On the other hand, any experienced teacher will at once think of many reasons why impulsive and awkward fifteen-year olds, with scant mathematical training should not be introduced to a standard physical laboratory, and numerous arguments also for not giving sophomores the liberties of an experimental desk in chemistry. Whatever order of presentation be followed, there is more or less dissatisfaction.

There is another unfortunate feature of science work in secondary schools, due possibly to illogical sequence, viz., the abrupt manner in which students are thrown with the opening of each year into the different special sciences. Our high-school science lacks unity.

In the fall semester 1900, there was introduced in the Lincoln High School an innovation, somewhat in the way of an

experiment, looking forward to the solution of the above problem. While the investigation is not yet complete, the successful results obtained during two semesters with several hundred pupils lead us to think that a report may be interesting to educators.

It seemed possible that a one-semester course for beginning ninth-graders might be constructed so as to include an experimental study of the important properties of matter and the simpler illustrations of forms of energy and chemical action, with special reference to physiography and biology and to the simple familiar phenomena of daily life. It was also fully realized that the course should be, not a series of disconnected lessons, but a thoroughly unified study and therefore a fitting gateway to the fields of science which follow.

The course included three days (two periods each) laboratory work and two days lecture and recitation per week. No textbook was used. The course was based on the individual experimental work of the student, supplemented by class discussions, demonstrations, lectures, and quizzes. Mimeograph instructions were provided for laboratory work. The apparatus was simple, being frequently devised by pupils or teachers, and was provided in sufficient quantity that each student might perform experiments in their logical order. Wherever possible, the inductive method was used. A reference library has been carefully selected and a list of supplementary readings prepared, explaining the applications of the various general truths discovered.

The following is a brief outline of the course:

1. OBSERVATION.—The course starts from a psychological standpoint. The use of each sense in furnishing knowledge is pointed out in class and the first laboratory exercise deals with the examination of different objects and a description of their qualities. Hereupon the *scientific method of study*, the advancing from facts to theories, is explained. Throughout the succeeding exercises the student is directed, whenever possible, to compare related phenomena, suggest an explanation of them and devise a means of testing the validity of his hypothesis. Gradually

that much abused term, "scientific method," comes to have a real meaning.

2. MATTER. *a. Definitions.*—The fundamental concepts of matter, body, substance, position, motion, force, etc. are made clear.

b. Measurement.—Then follow several exercises in measurement, teaching accuracy and self-reliance. The student is introduced to the meter-stick, the metric graduate and the metric weights, learns the advantage of the metric system and finds experimentally the comparative value of centimeters and inches, of liters and pints and of kilograms and pounds. The exercises are those usually found in the best elementary physics manuals. Before the practice in weighing, a balance is constructed from a stick, some thread and pill-boxes, and the "principle of the balance" worked out individually. Some determinations of absolute density follow.

c. Properties of matter.—A few experiments were selected to illustrate each of the following general and specific properities of matter: inertia; divisibility; indestructibility; impenetrability; porosity; compressibility and expansibility; elasticity; mass attraction; molecular attraction; solubility; transparency; color; odor; taste.

We have found it distinctly advantageous to emphasize the meanings, with little heed for the names, of these properties. Such cumbrous terms serve only to stifle the enthusiasm of the beginner over the simplicity of science. Divisibility and the approximate size of molecules is illustrated by diluting a solution of aniline-red of known concentration till the color is just visible; solubility by comparing the miscibility of liquids and the extent to which various solids dissolve in water under different conditions, simple quantitative experiments being much preferable to estimations with the eye. In connection with the latter property the importance of the solubility of the food materials of plants is brought out. The cause of tides and the holding in place of the bodies of the solar system is touched upon under gravitation.

d. Properties of solids.—Some well-known minerals are examined in one exercise, as to the distinctive properties of solids, such as hardness, tenacity, transparency, and form. Another exercise deals with the production and description of crystals of different substances, after which a little attention is given in lectures to the internal structure of crystals, their constancy of form, and the relation of the form to the substance.

e. Properties of liquids.—Surface tension and capillarity are studied by numerous experiments. References are read on capillary action in the soil and in the nutrition of plants.

f. Properties of fluids.—Diffusion and pressure. These are studied thoroughly in the laboratory. The student learns enough about osmosis to enable him to understand its importance in cell-nutrition. The variation of pressure in liquids and gases with the depth is illustrated and particular stress laid on the study of the *barometer* and its use in meteorology.

3. ENERGY.—*Heat* is selected as a typical form of energy, since its effects are so important in earthly phenomena.

a. The effects of heat, viz., change of state, change of temperature, and change of size, can easily be illustrated.

b. Thermometry.—Both Fahrenheit and Centigrade thermometer are studied and the fixed points of each determined in the laboratory. The effect of dissolved matter and change of pressure on the boiling-point and freezing-point of water may also be shown.

c. Transfer of heat.—Conduction, convection, and radiation. Particularly the last two are essential to a proper understanding of biology and geology. The cause of winds is brought out here.

d. Density changes of water.—After learning experimentally that water has a maximum density point a little above zero degrees Centigrade, and that water expands on freezing, the beginner is able to understand how rocks are disintegrated in winter and how water-life is protected from freezing.

e. Evaporation and condensation.—A brief study of this makes clear the presence and action of moisture in the air.

f. Transformation of heat into different forms of energy. Here the different forms of energy are observed and the conservation of energy emphasized, together with the derivation of all forms of energy from the sun's heat.

4. CHEMICAL ACTION.—The first few experiments of elementary chemistry, viz., those on physical and chemical changes, combustion and its cause, composition of the atmosphere, and possibly also the dry heating of animal and vegetable matter, serve to give the student knowledge of many of the changes in nature and their causes, the composition of organic tissues and the character of some of the most important elements and compounds.

5. ANIMATED MATTER.—If time remains, one period may be devoted to a microscopic observation and study of the simple living cell. This greatly broadens the course, for it opens the way for the farther study of animated matter subsequently.

The last lecture of all is given up to a general discussion of the different sciences, viz., (1) physiography, (2) botany, (3) physics, etc. The scope of each is outlined and the unity of all science is emphasized. In a later semester, when, *e. g.*, the biology instructor commences his work, he simply has to pick up the thread of thought and carry it farther into his field. The author has no doubt but that the succeeding sciences will be revealed to the pupils in a far better way than has heretofore been done.

The value of this course lies not simply in its being an introduction to the various sciences. To the many students who abandon high school after one or two semesters it furnishes a comprehensive and immensely valuable knowledge of science, especially of its methods and its fundamental importance in daily life. About two hundred and fifty references to "common things" were made during the course, and the pupils who have studied science but this one semester are wide-awake to the scientific aspects of daily life.

In our school the beginning mathematics is intimately correlated with this course. Algebra teachers are able to use a

great deal of the information gained from it in illustrating mathematical principles and devising problems.

Such a course as this would be especially valuable and practicable in the night schools of large cities for those who are anxious to learn a little about science, particularly since the apparatus is so inexpensive.

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PRESENT TENDENCIES IN SECONDARY EDUCATION

THE keynote of current educational thought seems to have been sounded by Professor John Dewey in his saying that, *the school is not preparation for life: it is life.* Education is to provide for the future needs of pupils by providing for their real present needs. One of the most notable and comprehensive tendencies of secondary education, and of all education, is accordingly the tendency to seek an understanding of the living, growing persons who go to school; and to treat them in a way to promote their healthy growth. This doctrine is sound at bottom. Persons are the most precious things in this life; and child persons as precious as persons fully matured. In this view we have true humanism. It is a view that makes the school interesting. It is moral; for what is morality after all but fullness of personal life? It is religious, too. "The knowledge of ourselves," said John Calvin, "is not only an incitement to seek after God, but likewise a considerable assistance toward finding him."

On the one side, such doctrine as this is leading us into individualism. It prompts the demand for free election of studies in the secondary school; for individualized processes of instruction.

On the other side, the study of development has shown how strangely dependent the individual is on his social relationships. We see in fact, that there is nothing worth the name of human personality that has not arisen under the stress and strain of getting on with one's fellows. So we have come to attach new significance to the mere fact that in school many young people come together and have varied dealings one with another. We are seeing that social intercourse is not a mere accident of school education but one of the chief things in school education.

We may go further and say that, the school is not only life: it is preparation for life. Just because it is life, it looks forward to larger life. Any life that does not look forward is poor and

mean; and we should make a losing bargain if we exchanged the old school that concerned itself only with the future, for a new school which concerned itself only with the present.

So our secondary education looks forward to the citizenship which awaits all of our students, and consciously prepares them for its duties. Whether they are destined for the more extended training of the University or not, it undertakes to direct their attention toward public affairs, well knowing that the time is already come for them to take anticipatory interest in such things. It takes account, too, of the fact that each citizen must have a life work peculiarly his own, in order to discharge his full obligation to the body politic. How secondary education may pay due regard to this fact and yet avoid the injustice of binding our youth at an early age to a course in life which may not be rightly their own, is one of the hardest problems with which we have to deal.

May I venture to add, that our secondary education looks even to life beyond this life; or rather to life above and all about this life. We are finding that the seething adolescence of our academies and high schools is above all skeptical and religious. The two things go together and belong together at this age. Education does not altogether meet the needs of the present life of our youth if it does not verge upon the shadowy fields of things too real to be seen.

The more important tendencies of our secondary education seem to lie in the directions I have indicated. Permit me now to call your attention to a more particular consideration of some of the topics already touched upon.

1. And first some tendencies affecting our courses of study. A recent writer has said that "The time for the finishing school has gone by." With equal truth it may be said that the time for the "fitting school" has gone by. I do not mean by "fitting school" a school for the education of youth who are preparing for college; but rather a school which prepares for college whether it educates or not. The proper business of every school is education. The growing recognition of this fact is one of the most marked of present tendencies. The sharp

distinction between preparation for college and "preparation for life" is fading out. I think we may say our present working hypothesis is that, so far as general culture is concerned, preparation for higher school, rightly conceived, coincides with preparation for life. I do not extend this principle to secondary schools of a vocational character. And I am not enough of a doctrinaire to accept it as a finality with a regard even to schools of general culture. But it has stood examination and trial sufficiently well to warrant us in employing it as a working hypothesis. Taken in conjunction with a second assumption which I will mention later, I think it will prove very useful in the future organization of our secondary education.

We may put it in different ways. Secondary education which is not good enough for the purposes of the colleges is not good enough for the purposes of life. Education which fails to give good secondary preparation for life, fails also to give good secondary preparation for college. Either way you turn it, the doctrine calls for some reëxamination of our school curriculums, and perhaps for some little change.

In the history of our courses of study, we begin with one fixed and strongly unified course for all. The demand for a recognition of varied needs has led to numerous changes from this old, invariable standard. Parallel courses we were first offered, each of them fixed and definite. Then options were allowed in one or all of these parallel courses. The number of such courses was increased. The range of options was enlarged. Then we began to hear of the doctrine of free election. This seems to be the polar opposite of that fixed course for all with which we started. It was necessary for us to come to this extreme, and get a survey of the whole movement from this side, in order to find out just where in the intervening territory we belong.

Will you permit a New Yorker who has long been a Californian to say that some of us on the Pacific Coast have looked with a certain wonder on the outbreak of the idea of the free election of studies in the East during the past year or two. The reported discussions of this subject sound strangely like

echoes of our own battles of eight or ten years ago. The sun has not yet learned to move from West to East. So I can explain this phenomenon only by supposing that President Jordan, in the free field of a new university was able to precipitate a movement which President Eliot has got underway more gradually in the established order of these older states.

We have not come to doctrinal agreement in California; but we have found a *modus vivendi* and have settled down to the detailed consideration of the question where between the two extremes, of the fixed course and the course with nothing fixed, the highest educational efficiency is to be found.

This, I take it, is the question for real school men in real schools to consider. One of the first things that appear from this sort of study is the fact that English is an indispensable subject in any curriculum. This is admitted by nearly everyone, even when it is not admitted that any other study is indispensable. English has taken the fixed place of Latin in the old curriculum. If other single subjects are not essential, we are coming to think that an outlook into certain other broad fields of study is necessary. The Committee of Ten led the way in pointing out this need, and the later Committee on College-Entrance Requirements has formulated a general plan under which the need may be met. In fact, the committee last named seems to have thrown a real Copernican suggestion into the midst of our confusion in this matter. What they have proposed will not differ very greatly in any given case from what is already customary in many schools. But it serves to show how the Ptolemaic tables of courses which many large schools present may be simplified and made to show forth the ideas which they really embody. Parallel courses with a fair number of options; election limited only by the requirement of "constants" in groups; and even free election under the direction of an efficient school principal, will all come in practice to pretty much the same thing; and what they come to is fairly represented by the report of this national Committee on College-Entrance Requirements.

But what does it all amount to? We may put the case in

some such way as this. Education from the cradle to the grave is largely a matter of keeping good company. For our adolescent, with his vibrations between the desire to be let alone and his extreme craving for companionship, habituation to good company is of prime importance. The school tends to set one free from mere dependence upon the actual companionships of daily intercourse, extending the relationship, as it does, to the great and good of all times and all lands. It increases one's capacity for finding companions in the secret chambers of books and in the still more shrewdly hidden secrets of the material world. Our young scholar is a provincial of the provincials. He must now go to the court, and come to know the wisest and fairest of this world. He is to be introduced to the best, and among them he may make such special friendships as he is fitted for.

Something like this, I believe, is the significance of Matthew Arnold's saying that in secondary schools the youth is to find "vital knowledge," though we may not make Matthew Arnold responsible for our interpretation of vital knowledge. It is only contact with the world of culture that can bring our youngsters out of their crude, provincial, individuality; that can really vitalize their humanity. They must be brought into relations with that one world of culture if they are to be made really alive. But they may touch it more intimately at some points than at others, for what is vital knowledge for one is not always vital knowledge for another.

These considerations suggest various conclusions. No study is worthy a place in our program which has not commanded the full devotion of some master mind. All students must be introduced to the same civilization, and since all are human their several ways of approaching it will not be fundamentally different. What seems still more significant is this: Even if it be true that what is best for one student is a little different from what is best for another, the fact remains that each student needs for his own purposes a well organized, unitary curriculum. I fear we are tending toward miscellaneous election from a miscellaneous mass of offered courses. But there is a

deeper tendency, which will surely become dominant—a tendency toward organic election from what is offered, no matter how miscellaneous that may be. A different curriculum for each student, if you will; but a real curriculum. Before leaving this question of the course of study, let us glance at the relation of the colleges to the schools. There has been a good deal of just complaint from the side of the schools, that the colleges shaped their entrance requirements solely with reference to what they believed to be their own needs, and not at all with reference to the conditions which must be reckoned with in the schools. Of late, I have heard complaint from the side of college men that the secondary-school men were becoming too independent: that they expect the college to accept whatever they may offer. There is great hope for the future in this growing self-respect of secondary-school teachers. It suggests very pointedly that school and college should meet on common ground and work out their common problems together. It was a bad state of things when the question whether students preparing for college should take one study or another in the secondary school, could be decided by a compromise between rival college departments, represented in a faculty meeting, without a moment's consideration of what may be intrinsically best for the students themselves at this stage of their schooling. College faculties should remember that every vote which they pass relative to entrance requirements is legislation for the internal working of secondary schools. Such legislation should at least be based on some intelligent conception of the nature and functions of the secondary school. To put it in other terms: the question of college-entrance requirements is a question of relationship between two institutions, each having its separate responsibility to the public. The college should set the secondary school the example of considering both terms of this relationship with perfect fairness. It has sometimes happened that the men of the academies and high schools have actually taken a more comprehensive view of this question than have the men of the colleges and universities.

Certain recent changes in college-entrance requirements are hard to interpret. I refer to the adoption of such extremely

flexible schemes of admission requirements as those of Columbia University and the University of Michigan. Can it be that these institutions, in despair of working out a satisfactory scheme of prescribed preparatory studies, are now going to the opposite extreme of requirements so general and variable that they do not quite insure to the student meeting them that his course of preparation shall have been a good secondary-school course? I do not raise this question with any cock-sure conviction that the criticism which it hints at is just. It is rather a question of open-minded doubt. Of one thing, however, I feel reasonably certain; and that is that this question of admission requirements is an educational question, and should be settled on educational grounds. I think, too, that the same form of settlement must be employed as that which serves in dealing with the larger question of the proper formulation of curriculums for all non-technical secondary schools. At least for present purposes, the method followed by the Committee on College-Entrance Requirements in this matter seems worthy of general acceptance. Some specific recommendations of this committee are open to objection. The question for college men and secondary-school men alike must be, "Is this the sort of curriculum which is best for educational purposes in the secondary grades?" and that means, "Does such a curriculum offer the best way in which the secondary school can present life at its best?"

The recent history of studies is significant. It appears from the reports of the Commissioner of Education that between the years 1894 and 1899 the percentage of pupils in our secondary schools studying Latin, French, German, algebra, geometry, physical geography, physiology, rhetoric, and general history was on the increase, the advance being especially marked in the case of Latin, algebra, geometry, rhetoric, and history. In the same period the percentage of those studying Greek, trigonometry, astronomy, physics, geology, and psychology declined. For a portion of the studies a report is presented covering ten years, from 1889 to 1899. In that time the percentage studying Latin had advanced from 33.62 to 50.29, and the advance in algebra, geometry, and general history, though

less marked, was very noteworthy. In these years the actual number of students attending our secondary schools had increased from a little less than 298,000 to a little more than 580,000.

It would seem that in spite of this enormous increase in attendance the schools had been gravitating back toward concentration on a smaller number of studies, and those chiefly the central studies of the old humanistic curriculum with the omission of Greek. While Greek seems to have declined proportionately, the falling off is very slight, and the actual increase in the number of students studying that glorious old language was not far from twelve thousand. It is likely that physics, which shows the greatest retrogression in the ten-year period, had made greater advance than the most of the other subjects in methods of presentation. I think it likely that the percentage of students studying physics by laboratory methods, if it could be determined, would show a substantial increase.

On the whole, then, we may safely conclude that in their actual working our secondary schools, at the same time that they are increasing enormously in attendance, are becoming more conservative in their schemes of instruction, are less given to what have been called "short information courses," are more humanistic, and on the scientific side are doing more in the direction of an improvement of instruction than in that of the extension of studies.

We may note in passing that in the same period, despite the tremendous increase in attendance at higher institutions, the number of students in our secondary schools who were not preparing for college increased more rapidly than those who were; 18.66 per cent. were preparing for college in 1889–90 and 14.05 per cent. in 1898–9.

2. There are many reasons why the question of teachers is more important than the question of studies. And the conviction is now well grounded that teachers of secondary schools as well as teachers of primary schools must be specially trained for their work. Twenty years ago this was not true. No one institution has done more to bring American school men to a new

mind in this matter than has your own Columbia, with its Teachers College. But the pioneering was done by western state universities, and they do not intend to be left behind in a movement which has now become national. Voices will still be heard protesting against the newer demand for professional training on the part of those who would teach in our high schools and academies. But the time is past when such objection can seriously hamper the general movement. Let it be added that the time is past when that movement can be seriously hampered by mistakes and inadequacies in the training attempted. But it is necessary that such mistakes and inadequacies be corrected as rapidly as possible, and such correction is now the order of the day.

What do we look for in our teachers? First, by all means, a moral quality that is more than negatively good—some real warmth of loyalty to righteousness; and, in addition, something that is contagious about it. It is the characteristic that it may be caught by others which elevates it from a merely personal quality to a teacher quality. Secondly, manners in full accord with such morals. A divorce of manners from morals is bad for both. Thirdly, a living intellect. To be such it must be active and must live on substantial food. Fourthly, the disposition to communicate and some aptitude for such communication. Fifthly, the tendency to improve and to coöperate with the others in making improvement, which is what I understand by professional spirit.

Some of this must be got by birth or not at all. For such portion training colleges are in no way responsible. Then there is a great deal to be done by way of improving natural endowments on the peculiarly personal side; but we only make ourselves tedious when we draw up for prospective teachers classified lists of moral virtues and their contrary vices. Better, so far as these things are concerned, encourage that self-respect which acts frankly its own part, and that respect for excellence which renders one responsive to good example.

We get down to the serious business of training in that which remains, and difficult questions here present themselves.

Teaching is an art, and we shall disappoint the expectations we raise if we undertake to teach it wholly as applied science. But it is an art which is steadily drawing nearer to the related sciences. At present it is more scientific than oratory; less scientific than medicine. It must then be mastered as an art, and so is very intimately bound up with those personal qualities which it is difficult to treat of apart from mere subjective sentiment. What sort of instruction is available here, if instructor and student would both maintain a proper self-respect?

The faithful observation of good teaching done by others, as in the German *Probejahr*. A difficult thing this is to manage. It repays effort, however, if it awakens the conviction that one can learn from the best that is going on near at hand.

> Here work enough to watch
> The Master work, and catch
> Hints of the proper craft, tricks of
> the tool's true play.

Then practice teaching under guidance. Not enough of this to master the process, however. Such training sets and stiffens like a mold. But enough to enable the beginner to avoid waste of time and of child material — costly stuff — in finding his own best way of doing his own work; enough, too, to discover and cast out the cases of born incompetence.

If the sciences do not yet dominate this art of teaching, as they already dominate the art of medicine, they are having more and more to do with it, especially the sciences of human development. Enough of this our prospective teacher should get to face him hopefully toward the scientific side of things, in confidence that more and more definite guidance in his art will come from that direction. Enough history of education, too, to help him understand that education is a progressive aspect of human society — to put him in the attitude of coöperation with fellow schoolmen in furthering that progress. Finally, emphasis must be laid, all the time, on soundness of scholarship. The colleges that train our secondary-school teachers should give forth no uncertain sound in their requirement of scholarly excellence. Otherwise they will be likely to fail in the whole of their

undertaking. Even the morality of their students—the real if not the conventional morality—will be uncertain if their scholarly standards are low.

We may be modest in making claims with regard to the professional training toward which the teaching craft of our secondary schools is tending. But many signs show that the tendency is well under way; and with all of its present inadequacy, the training offered is working gradually toward stability, solidity, and effectiveness.

Yet after all this is said, the discovery of teachers is as important as the making of teachers. The fact that so much of the real teacher-quality is inborn gives emphasis to this view. In part this discovery of teachers may be the work of colleges and training schools. In part it is the work of the superintendents and principals. But in a larger sense it is a result of a favorable organization of the whole set of conditions and associations which surround the teacher's calling. We look for real life, and life at its soundest and best in these secondary schools. To have it, it is necessary that young men and women who represent our American life at its soundest and best, shall be drawn into teaching positions in these schools; and that those who show special aptitude for such work shall find good inducements to stay in it. Such inducements are the opportunity to do their work to good advantage, reasonably good salaries, and such social standing as will encourage self-respect on their part and on the part of their families. It is plain that these inducements are to be provided in part by the action of boards of education and in part by the general attitude of the communities back of those boards. The real discoverer is the community, acting under such leadership as it may choose.

But there are other agencies at work. Whatever is done to render education more professional, tends to draw toward it men who have professional tastes. In this point of view, the teaching body is the discoverer. Excellence in the profession tends to attract and discover excellence; and by cherishing most religiously the standard of our profession we make it more worthy to be cherished.

Again, every advantage in the scientific, historical, or philosophical treatment of education tends to draw to it persons of intellectual taste and ability. In recent years we have seen men turning to education because of the marked improvement of our pedagogical literature. Then, the knitting together of the interests of our secondary schools and universities works in the same direction. In some parts of the country, the teacher in a high school finds himself, in a way, brought into the life of the universities. The influence of such a relation is not to be disregarded.

Yet the chief responsibility comes back to boards of control and the communities to which the teachers minister. We cannot urge too strongly upon them the necessity that they discover superior teachers for their secondary schools, by making the teaching positions in those schools such as superior men can accept and hold without loss of self-respect. Within the past few years, we have repeatedly seen first-class men throwing up high-school positions in disgust at the petty politics with which those positions were beset, or in despair of being able to provide for their families with the salaries which those positions offered. Such a state of affairs is deadening.

It is difficult to say conclusively whether the general movement of the time is forward or backward in these particulars; but it is my profound conviction that on the whole we are improving. There are many indications that the standard of preparation for secondary-school positions is rapidly advancing. Partly as cause and partly as effect of this change, the general standing of secondary-school teachers in the community seems to be rising. A rapid increase in the number of college graduates seeking high-school positions may prevent salaries from rising proportionately with other forms of public recognition, but I do not think we need fear the ultimate outcome of this condition.

Within the universities there is observable a growing sentiment in favor of requiring a minimum amount of graduate work of students who are to be recommended as teachers in secondary schools. It has been suggested that this may lead in time to the recognition of the master's degree as the standard teaching

degree. For many reasons this notion seems worthy of serious consideration.

Speaking broadly, the doctrine that the school is real life may be expected to work to the advantage of teachers and teaching. It puts the school into closer touch with the home, and carries into the school the better standards of the community. The growth of wealth and the sharpening of social distinctions may in some measure negative this tendency; but in other ways it will be reinforced by those very conditions. It is not too much to expect that the new century will see a new generation of great school men. If there has been no Thomas Arnold nor Edward Thring in our American schools, we have had many excellent teachers, from Ezekiel Cheever down. Let our best men find encouragement and recognition, both public and fraternal, awaiting them within the teaching profession, as other men have found in other professions; and our teachers of world-greatness will in due time appear.

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(To be continued)

THE LYCÉES OF FRANCE

ADMINISTRATION AND DISCIPLINE

In a former article upon the French lycée the discussion was limited to the program of studies and methods of teaching. This article will deal with some aspects of the administration of the lycées, and with their more general rules of discipline.

In what was said about programs and methods, attention was called to the fact that uniform curricula for all lycées, dictated by the ministry of education, furnish an excellent example of the centralization of French institutions — a centralization that is carried out so logically in the administrative offices of the lycées that a professor in one of the more prominent of them describes it as fairly "paralyzing." "Our need, our pressing need," he says, "is for some relaxation of the paralyzing centralization. And, unfortunately, the problem is so complicated with us, and made so difficult by old usage, by the absence of real living organisms anywhere out of the state, that I don't see any hope of improvement in the near future. Whatever you do (in America), beware of that perfection of harmonious machinery which is our system of secondary instruction. But I doubt not you shall know how to stop in proper time." Fortunately, there are not wanting signs that we shall avoid the error of bureaucracy in education, in spite of the efforts that are being put forth in that direction in the organization of the machinery of school superintendence in some of our states.

There is at present no code or collected body of the many decrees, laws, or explanatory circulars that define the administrative limits of the organization of the French system of secondary education, although the legislation for the primary and superior systems of public instruction has been codified. I am able, however, to indicate quite fully the official relations of the lycée to the state, by the courtesy of Professor L. Morel, of the

Lycée Louis le Grand, to whom I am indebted for many of the details that follow relative to this matter.

One is surprised, however much he expected it from his previous experience of the Gallic love of the explicit, to note the infinite pains taken by the ministry of education to prescribe the minutiæ of the administrative life of the lycées — the thousand and one details of internal discipline and of the material and moral life of the student. To illustrate, the lycées of Paris announce in their prospectuses, which have been "viewed and approved" by the vice-rector of the Academy of Paris, that they defray "the cost of the ordinary medicaments prescribed by the house physician," but that "the lycée relegates to the charge of the family any exceptional régime or special medicines necessitated by a debilitated constitution, or maladies contracted outside of the establishment — such are *antiscorbutic syrups, cod-liver oil, ferruginous preparations,* etc." In another matter of hygiene we would not quarrel with the directors of the lycées on the score of the exactness of the rule that, "one Saturday of each month, the resident students take a complete bath in an establishment in the neighborhood, to which they are conducted by a tutor. On the other Saturdays they take foot baths in the house." Indeed, I have heard of two head masters of private schools, one of whom makes neglect by the student to take a shower bath immediately after his daily exercise a serious breach of discipline, while the other requires his students to record their baths, who would doubtless maintain, in this particular at least, the superiority of Anglo-Saxon over Latin institutions. Be that as it may, there is no doubt that the personal life of the French student is carefully — too carefully, we must believe — watched and guarded, being subject, as in every other feature of his education, to the supervision of a body of inspectors, "representing, wherever they go, the all-seeing and all-directing authority of the minister of education."

There are, however, besides the lycées, secondary schools that once enjoyed some measure of autonomy. These are the municipal colleges. While in them, as in the lycées, the state appoints every employé, from the head master down to the

teachers of gymnastics and fencing, the head, or "principal" of the college had formerly a certain independence in the material administration of his house. His profits were in proportion to the number of his students, so that he had personal as well as professional motives for working for the success of his school. Moreover, many towns took a local pride in their colleges which tended toward the development of an individuality in each institution. About ten years ago, however, the central authority, thinking that the dignity of the "principal" suffered by reason of his being permitted to make money as a shopkeeper might do, substituted a fixed salary for his proportionate share of profits; but as this change has resulted, in many places, in a decrease in the prosperity of the colleges, there is observable a tendency to return to the old method of compensation. These municipal institutions are supported by the state only in part, yet as far as the program of studies is concerned they are as completely controlled by the state as are the lycées.

While the lycées are maintained by the state, and all of their professors, officers, ushers and servants are public functionaries paid out of the state funds, yet they are not free schools. Resident boarding students, or pensionnaires, are charged from 1300 to 1650 francs per annum, according to class, the charges increasing as the student passes from the fourth class to the classes in philosophy, etc. The demi-pensionnaires, who enjoy all of the advantages of study accorded to pensionnaires, and who are permitted to take the midday meal and the afternoon luncheon at the lycée, pay from 750 to 1050 francs per annum. Externes, or day scholars, are charged a tuition varying from 350 to 500 francs. These charges for tuition, etc., are considerably lower than similar charges in first-class schools in America, and it will readily be seen that, discounted as they are by large sums remitted on account of the "bursiers," students on the foundation, and "pensionnaires libres," they are by no means sufficient to defray the expenses of establishments as completely equipped as are the lycées. The tariffs quoted above do not, of course, cover the student's total expense account. There are the usual extra charges for piano, fencing, dancing, and riding lessons, an

"abonnement" of six francs per annum for concerts, and a charge of ten francs or more for conveying candidates to the higher government schools for the entrance examinations. Each student must furnish his own trousseau, which is prescribed in detail; but the lycée furnishes the text-books used in the study of the classics, and paper, pens, etc., for class-room work. Fathers of large families are rewarded for the fulfillment of a public duty by being given a discount on tuition proportionate to the number of their children in the state schools, the amount varying from one eighth for two children to three sixteenths for four. These discounts, and the tendency toward a decrease in the number of pensionnaires, must still further deplete the peculiar sources of revenue of the lycée, while adding to the charge upon the public budget.

Undoubtedly the greatest single item of expense in maintenance is to be found in the salaries paid the numerous administrators, officers, teachers, and servants connected with the lycées. The staffs of all of them are organized upon a uniform plan. At the head of each establishment is a proviseur, or head master, who is assisted in its management by a secretary, a censeur and an économe. The censeur is the proctor or disciplinarian of the school, and the économe is its bursar. There is also a house physician, usually an advanced student in the University of Paris, who has the supervision of the nurses in the infirmary and of the administration of the remedies prescribed by the physicians attached to the lycée. Then there are the "repetiteurs," or tutors, who accompany the students to the baths, upon excursions, etc., and who sleep in the dormitories. The masters proper do not ordinarily live in the school, and are to be found there only upon the occasion of a recitation, or one of the weekly conferences that are held for certain classes. Not many of the professors have more than ten hours of work a week, and there are, therefore, proportionately, more of them than are to be found in our public secondary schools; but if they teach a comparatively small number of hours, they have large classes, except in modern languages.

These external appearances of the administrative machinery

of the lycée are not nearly so interesting as its "régime intérieur," a glimpse of which gives one some notion of the true spirit in which the conduct of the institution is regulated. The pensionnaires are separated into four divisions, each of which has its own playground, study hall, refectory, and dormitory. The grouping of classes in these divisions varies in different schools. In one of them, the first division consists of the students of the classes in science; the second, of the classes in philosophy and rhetoric; the third, of the students of the second and third classes; the fourth, of the youngest students, those of the fourth class or form. When students below the fourth or fifth class are admitted into the same institution with older boys, they usually occupy a separate set of buildings called the Petit Lycée.

Parents or guardians wishing to send a boy to one of the lycées must first fill out the blank forms of a statement of the applicant student's age, residence, religion, etc., and the modern language he will take, and this paper the parent signs under the affirmation:

> I declare that I have taken cognizance of the conditions announced in the prospectus, and engage myself to conform to them completely.

The student, upon entering the lycée, must present his certificate of registration of birth, a certificate of vaccination, a certificate of good conduct, and a certificate that he has quitted all charges at the institution previously attended. New students must be presented by the parent in person, or by his correspondent. The latter is a responsible person, designated by the parent, who is willing to take charge of the pensionnaire whose parents do not live in town. He must have time to accompany the student upon the weekly or fortnightly sortie or excursion. The parent must not only name a correspondent, but he must also designate the several persons who may visit the student or correspond with him. Visits, even by parents, may be made only at stated times: 12:30 to 1:30 and from 4 to 5 o'clock on lesson days, and on Sundays from 11 to 12 o'clock and from 4 to 5 o'clock. Each lycée has its public parlors, and in these alone may the parent see his son, unless the boy is ill.

It is rarely possible for a parent to visit the class room, and

then only upon permission given in writing by the superior authorities; in fact, nothing could illustrate better than does the attitude of the lycée to the parent the truth that democracy in France has not gone beyond government "for" the people. For, while a student's parents are kept informed as to his conduct and his progress in his studies by reports made at the end of every trimester, they are not considered competent to criticise either the disciplining or the instruction of their sons. Education is an art; its technique may not be comprehended by the ordinary man; it is the affair of experts, who demand the same deference from the layman as is expected from him by lawyers or doctors skilled in the mysteries of their professions. Doubtless there is something to be said in favor of this professional attitude, shared by French in common with other continental teachers; and it undoubtedly explains the curious impatience with which class-room visits, the coöperation of women's school alliances, etc., are viewed by teachers of foreign birth and education who have found their way into our schools. But, in spite of the fads that are sometimes foisted upon our schools by individuals who make reform a profession, and who take advantage of the American teacher's belief that it is his duty to coöperate with the community he serves, there is no doubt but that the schoolroom benefits by the consciousness that it is always open to the criticisms suggested by the healthy common sense of the lay mind. Yet professional skill and authority must be recognized and conserved; some middle ground must be found between the intolerable meddling of Cleon and the equally intolerable meddling of the Ephors.

An attempt has been made to find such middle ground in France; or, at any rate, the necessity of the intelligent coöperation of the family has been formally recognized and advocated. A commission, appointed by the central authority in 1888 to investigate and report upon the administration of the lycées, submitted its conclusions in 1890, devoting a chapter of its report to the subject under discussion. After adverting to the fact that the lycées, being of a type either military or religious, have regarded themselves less as continuing than as reforming

the work of parents, following in spirit the rule of Mme. de Maintenon, who would not allow parents to visit at Saint Cyr more than four times a year, and then only for a brief half hour, the commission declared:

> Far other is the ideal, wholly civil and not at all cloistral, which we have in mind. . . . . One of the points with which we have been the most occupied has been to find the means of associating the family most closely with the educative work of the lycée.

So much for the wish and the theory—the condition is still that the parent knows little more of the inner workings of the lycée than he gleans from the statistics of the trimestrial report of his son's progress. Old usage does indeed make a reform that is largely social very slow of accomplishment in France.

If the attitude of proviseur and professor toward the parent be still such as has been sketched above, it can be imagined that it is even more superior when the student himself is concerned. I do not mean at all to imply that the student is not treated with sufficient kindness and respect, but only to indicate that in no implication of the term do his surroundings encourage him to self-government and initiative. In the previous article, attention was called to the fact that the self-activity of the student, which is encouraged in our secondary schools in the form of student organizations and enterprises, as it is in other ways in the kindergarten, is not developed by the régime of the lycée; while any such student participation in school government as is found, for example, in the Hyde Park High School in Chicago would be utterly foreign to the French mind. It is true that in the report referred to above, the value of student organizations in promoting self-development is recognized, and that the lycées are urged to encourage the formation of them; but, for reasons to be stated later, as little has been accomplished in this direction as in securing the coöperation of the home.

When it comes to the control of the student as an individual, we find him under much greater restraint than we would consider proper. Beyond the rules with which we are familiar in our own boarding schools concerning indiscriminate letter writing, spending of pocket money, and confinement within

bounds, etc., the French schools have so hedged the student about with a multitude of petty restrictions that he must feel either that, as a matter of course, he cannot be trusted, or that tutelage is the normal condition of life. Until he is seventeen years of age, the pensionnaire may not leave the precincts of the lycée unless he is accompanied by "his father, mother, tutor, or authorized correspondent;" and when he goes out he must wear the regulation uniform. At the age of seventeen, he may, upon occasion, go out alone; provided, however, that he has secured permission to go from the proviseur on the evening, in some cases on the Friday, before the sortie. In one lycée, the proviseur must be notified, on the evening before the contemplated sortie, that the student is expected by his parents or correspondent, when the applicant is given a "feuille de route" which indicates the hour of his departure, and must show, upon his return, the hour of his reception by the person awaiting him, and the hour that he took leave of his correspondent to return to the lycée. "Every student demi-pensionnaire must have a memorandum book in which the *répétiteur* writes daily notes, and which the parents must sign (visé) each day." "Externes may have no communication whatever with internes." Contrast the mental attitude which such discipline must develop with that of the bird-nesting, keeper-harrying Tom Brown or Stalky, and we are again made to see the reason why France produces no younger sons. In this connection, the writer remembers a scene characteristic of French schoolboy life which he witnessed while making a bicycle journey upon the splendid "route nationale" leading into Rheims. Far ahead was a long procession, at that distance so dark and somber that it looked fairly funereal. Nearer approach, however, revealed the boys of an ecclesiastical lycée situated in the environs of the city returning from one of their regular excursions. Although they carried hand balls and a football or two, and seemed merry enough, the fact that they were marched along by classes in regular formation, attended by numerous watchful priests, showed how little of boyish initiative or spontaneity there was about the whole affair. Again, I was better

able to understand how, to the French youth who dare not go to the colonies, or to the New World, or even away from his native town, for fear that he will lose the "protection" he enjoys at home, the Emersonian injunction to "cast the bantling on the rocks" would seem nothing but a wanton brutality. The gymnasia of Germany do not produce a temper much better, if one may so judge from the statement of an American, resident at a German university, who says, in writing to one of our leading weekly journals, that German boys "are kept in school under a discipline so strict as to prevent the development of a manly, self-reliant character."

The regulation of the French student's daily life might be described, if he be a pensionnaire, as a sort of military communism. The American and English boarding school practice of lodging boys in "cubicles," or in separated rooms, is unknown. Students are lodged by classes in dormitories containing long rows of single beds with lockers at their heads—the whole arrangement suggesting the barrack bedroom or the hospital. The appointments of the dormitories and lavatories, their heating and ventilation, are, however, very good, especially in the newer buildings. As was said above, the students are classified, each division having its own dormitory, study hall, dining room, etc.—in some cases its own "cour de récréation." The student's life is thus doubly and narrowly communal—he has everything except a corner that he may call his own, and he must be always eating, sleeping, exercising, studying, and marching to the baths or to recreation in company with a crowd of fellow-students.

His food is prepared in large, clean kitchens, is carefully weighed, and is served according to a menu previously inspected by the house physician. His diet certainly does not err upon the side of fullness and too great variety—a breakfast of café au lait and bread at 7:30; a dejeuner of one meat, one vegetable, bread, and dessert at 12; a slight luncheon at 4:15; and dinner of soup, meat, and vegetables at 8 o'clock, seems a rather slender régime.

Articles of clothing are prescribed in detail, but need not be all of a kind, except, of course, in the case of the uniform. The

uniform consists of a hooded military cloak of blue cloth, a blue coat with gold-embroidered collar and uniform buttons, blue vest and trousers, and an embroidered cap.

It will be observed that up to this point only details of the student's material environment have been indicated, nothing having been said of the true inner life of the lycée, its atmosphere, traditions, and spiritual life. The reason for this silence is obvious—the real quality of any student life is incommunicable to one who has not lived it himself, unless, indeed, he can get breaths of it from the narrative of a Tom Brown or a Beetle. As the French Tom Brown does not exist, and as it is very doubtful if a school of rigid government discipline will ever produce him, this subject must be here dismissed with the recording of a few impressions—and it should be remembered that they are given merely as impressions.

Even the casual visitor to the lycées of a single city, as Paris, is impressed with something like a faint flavor of individuality in each one inspected. As this impression cannot be due to differences in régime or curriculum, it must be the result either of the tone of an administration or of associations invoked by an ancient architecture and historical tradition. The Lycée Louis le Grand, modern in all its appointments, for the most part new and magnificently built, seems an expression of the modern democracy, an impression heightened when one learns that it numbers Voltaire, Robespierrie, and Michelet among its former students. Nevertheless, this school was once a part of the old University of Paris, and afterwards a Jesuit college, until it was again taken possession of by the state. The Lycée Henri IV. built upon foundations, dating from the fourteenth century, of the Abbey of Saint Genevieve, whose life is depicted in a series of masterly mural paintings by Puvis de Chavannes in the neighboring Panthéon, is more steeped in historical tradition. With its so-called Tower of Clovis, its ancient chapel, and the old halls of the library of the canons of Saint Genevieve transformed into dormitories, it breathes the atmosphere of the ancient past. "Ancien Lycée Napoleon—College Henri IV.—Lycée Corneille" in former days, it has a history of transformations as a school,

through all of which its cloistered walks and gardens have preserved an air of quiet culture imbued with the classical and literary spirit. Pedestaled busts, placed in the midst of shrubs and flowers, have been raised to Delavigne and Victor Duruy, the latter of whom was a professor in the old Lycée Napoleon.

Another lycée of the Quartier Latin, the Lycée St. Louis, fits well into Professor Haskins general characterization of the lycée as an institution whose "methods of instruction are still largely tinged with the spirit of formalism and routine inherited from the Second Empire . . . . a semi-military institution which has much of the appearance of barracks, and calls its pupils to class by the beating of a drum."

The question as to how much strength the associations suggested above may acquire in the reminiscent affections of graduates of a lycée can scarcely be answered, as it is a matter of individual temperament and impressionability. That there is a degree of affection for the old school, and that a feeling of comradeship is there developed, is attested by the existence, in connection with each lycée, of an "association amicale" whose declared aim is to "establish among old students a common center of friendly relations, to give upon all occasions aid and protection to old comrades, and to assure a patronage to those who need assistance in beginning their careers." These associations also give prizes to graduating students attaining the highest grades in conduct and studies.

Thus it is always a prize—a medal, the consecration of his studies with the baccalaureate, admission to the École Polytechnique or to St. Cyr, a government office—that the student has in view as the object of his studies. He is brought up in the knowledge that if he does his part faithfully, intelligently, *and according to the letter of the program*, the state will do the rest. The sum total, the resultant, then, of the influence of the lycée must be to reinforce the communistic tendencies of the genius of the French people.

It would be unfair to conclude this sketch of the administrative side of the lycée after having indicated only a few of its specific aspects as the bases for generalizations like the one just

given above—as unfair as to weigh a man's character according to the visible assets of his exterior life without reckoning with his ideals. Enlightened ideals worthy of the best pedagogy of any country, are today slowly transforming the administration of French secondary schools. Fortunately, these ideals proceed from the top, having their sources in the studies and experience of France's most eminent educators. Unfortunately, so the writer must believe, they have had the fate to become embodied in the decree and the governmental report—the report (referred to above) of the commission appointed in 1888.

This report, published together with an explanatory letter from the minister of public instruction, M. Leon Bourgeouis, and a decree of twenty-three articles outlining a new discipline for the lycées, is a most admirable document. In it the commission has addressed itself to the problem, how to modify the military type in which the lycée was first conceived to the point of making it a school in self-government? To quote M. Bourgeouis, the old discipline, the "discipline répressive . . . . which contents itself with an apparent order and an exterior submission beneath which are concealed evil instincts, repressed but not corrected, and secret revolts which will break out at last," must give way to the "discipline liberale," which seeks "on the contrary, to reform a youth as much as to restrain him . . . . which would touch the essential, the conscience, and obtain not that tranquillity upon the surface which does not endure, but an interior order—that is to say, the acquiescence of a pupil in a rule recognized as necessary.

To obtain this "substitution désirable de l'état de paix à l'état de lutte," the commission recommended, and it was decreed, that punishments multiplied daily, such as the *piquet* (standing still in one place), the *pensum* (task), deprivation of recreation and rest—such punishments as are in essence merely corporal, "injurious to the work and the health of the student, making him hostile to his masters and irritating without amending him," should be henceforth prohibited. Since 1890 the only punishments authorized have been the following: (1) The unfavorable report; (2) re-study of the lesson in whole or in

part; (3) assigned work corrected in whole or in part; (4) extra assignments; (5) detention upon holidays; (6) deprivation of the *sortie;* (7) exclusion from a class or a study; (8) suspension or expulsion.

Prescriptions of punishment, however, indicate discipline only in its narrowest sense, and the commission fully recognized that truth by elaborating methods by which discipline might be equated with the day's work and play, and by creating an organization through which the enforcement of rules in a certain uniformity of spirit might be secured. The organization referred to, the council of discipline, was ordered established in every lycée. It consists of the proviseur, the censeur ex officio, five professors, one "surveillant général" and two tutors elected by their colleagues. It meets regularly every three months for conference upon the morale of the lycée, and may be convoked in emergency by the proviseur.

So much for organization and rules. How far did the commission go in advocacy of institutional work as an essential part of any good scheme of discipline? It certainly went very far for a commission of Frenchmen; for, as has been remarked above, the report encouraged, although not without reservation, the establishment of student organizations, such as musical societies and literary and scientific clubs. The rendition of classic plays, a much-favored student enterprise in the Jesuit schools, is scarcely commended, still less the production of plays written by the students themselves. The advantages of the debating societies of the English school are fully appreciated; but the conclusion reached concerning their adaptableness to French needs should rejoice the shade of Carlyle, for topical recitations upon prepared subjects, delivered under the control of a master, are distinctly asserted to be a better preparation for public life than a premature imitation of juristical or parliamentary debates, which is said to encourage a seeking for effect rather than quality in argumentation and to develop a certain hardihood in speaking on topics concerning which the student is not well informed. This is an objection to the debating society which does not obtain, however, in this country, where even high-school

debates, not to mention intercollegeiate contests, stimulate a voluntary preparation that involves severe labor, and a self-denial of which the French boy would be, as a rule, incapable.

Inherited incapacities of one sort and another make it impossible for the French to adopt the voluntary institutional work of English and American schools, much as they would like so to do. In this connection it is curious to note in their allusions to "old boys" and to Rugby, how much the commissioners of 1888 have been attracted by the liberal life of the English public school. "Above all," they say, "let the students themselves administer, in their associations, their own affairs and their own by-laws." Nevertheless this mandate has accomplished little to bring about the result desired; for, after a decade of agitation and a decade of experimentation in the Lycée Lakanal, the French have been unable to acclimate Anglo-Saxon school associations and games. The French Tacitus still exhorts in vain his fellow-citizens to emulate the vigor of the Goth.

A last word concerning some seeming inconsistencies in what has been said about the lycée. It may be urged, first, that criticism of the organization and discipline of the lycée has been wholly from the viewpoint of Anglo-American tradition — that when all is said, the lycée prepares its students for life from the French viewpoint as well or better than American or English schools prepare for the life that their students will live. This contention might hold if it were not true, as has been indicated above, that a measure of the dissatisfaction of leading French educators with their own methods coincides with the objections taken to them in this paper, and that this dissatisfaction has again come to a head in the very recent appointment, by the national chamber of deputies, of another commission to make inquiry into the subject of secondary education. There is little doubt that the report of this commission will result, sooner or later, in important and admirable reforms. Meanwhile the imperative reform, that without which all other reforms will soon become dead, remains unaccomplished; for, it will be observed, the change is again to proceed from the source of that "paralyzing centralization," against which French institutions,

like their Latin prototypes, seem to struggle in vain. And here there is opportunity for explanation of the second seeming inconsistency with which this article may be charged.

It was said in the earlier article that the French method of creating a program of studies by a central board of experts, has produced results superior to those attained by our extra-legal committees and the experimentation of a multitude of petty authorities ; and the statement is probably true, for the curricula outlined in that article are superior in matter and arrangement to the curriculum actually followed in the average American secondary school. In support of this statement, it is only necessary to quote again from Professor Haskins' report to the Committee of Seven on the study of history in the lycées, to the following effect : "At present we have little to learn from their methods of instruction beyond the suggestions that may be derived from their clear and well-ordered text-books, and from the arrangement of topics in the program, which Matthew Arnold declared no educated man could read without profit — without being reminded of gaps in his knowledge and stimulated to fill them." Nevertheless, I believe that we have something better in America than this *imposed* harmony and completeness of arrangement — and what this is will be fully appreciated, if one reflects upon the significance of the method by which our most effective advances in secondary education have been accomplished — by the spontaneous but organized efforts of the teaching body itself, working through such unofficial, extra-legal boards as the Committee of Ten, the committees on college entrance requirements, and the Committee of Seven. For in them we have the very "living organisms outside of the state," so needed in France — and in noting the absence of such organisms as his reason for despairing for improvement in France in the near future, it seems to the writer that Professor Morel hits the nail squarely on the head.

Official reform too inevitably degenerates into official pedantry, or, if it does not, is still never as vital as the reform that shapes itself out of living needs rather than out of officially perceived desiderata. In contrast with the law-made reforms of

France, how admirable have been the reforms in our own schools, resulting from the reports of the committees named above. Representing a slowly-gathering conviction that changes were imperative, presented not as decrees but as adaptable recommendations and with the tremendous force of an organized, professional opinion, they have been adopted voluntarily and eagerly as ideals. They have invoked living enthusiasms that will in turn create other enthusiasms adequate to the demands and true spirit of our national life. Such reforms can never become petrified into a series of decrees.

They contain in their evolutionary character the corrective principle for too much exuberance. The wastes in our systems of higher and secondary education so unerringly pointed out by President Harper, would better be eliminated, not by the artificial methods of the modern trust, but as they are being corrected — by the natural gravitation of students and endowments to the greater foundations, and by our elastic system of accredited and affiliated schools. The elastic and unarbitrary supervision of our secondary schools by our universities, the admirable spirit of coöperation between their respective faculties, the de-centralization of our school organization until every state and every city constitutes an experiment station held sufficiently in check by the strong forces of imitation and the organized public opinion of the teaching body — these features of the organization of our system of education constitute the signs upon which we must base our belief that it is developing along right lines. In secondary education, especially, we seem to be avoiding the excessive particularism of England and the over-centralization of France; to be finding, if one may do himself the doubtful compliment of quoting his own analogy, a status midway between control by Cleon and control by the Ephors.

We shall continue in this happy condition if we continue to test our work by the standard of the student himself — not by the standard of an idol of administration, discipline, or pedagogy. If the mere formal content of education and its arrangement are getting to be much the same in all countries; if systems

of administration and discipline are approaching an ideal of international pedagogics, it is all the more essential that we should be true to ourselves in searching for the higher law governing our own American needs and destiny.

EDWARD L. HARDY

LOS ANGELES, CAL.

EDITORIAL NOTES

GEORGE HERBERT LOCKE

FOR the excellent illustrations of the American system of education and the German system of education which we published in our June number we are indebted to Dr. Henry L. Taylor of the Regent's Office, Albany, N. Y., to whom, also, we are sure, our readers feel a debt of gratitude for the excellent articles that he has been contributing on Education at the Paris Exposition.

WAYS and means of providing public secondary education for the children of England is now engaging the attention of the educational workers of that land. Mr. Clondesley Brereton, one of the most untiring of these agitators, made a statement in a recent address which will meet with a hearty response from our readers. He said:

> The best training for the intelligence and the character and for the fostering of public spirit can alone come from a secondary school. It is obvious that any district that is insufficiently supplied with these "nurseries" of public spirit and trained intelligence must be at a serious disadvantage in comparison with the others, through the standard of intellectual expectancy in the area being lower than need be.

AN interesting contribution to the much discussed subject of commercial education was made by Sir Joshua Fitch in a recent address before the Society of Arts in London. He had asked a London banker of large business experience the question, "What are the qualifications you hold to be most important when you are seeking a new clerk for your bank?" The reply was simple and direct:

> Next to a good character and reputable family associations, it is requisite that he should have had a good general education, that he should write well and have an intelligent acquaintance with arithmetic, and that he should *not* have learned book-keeping. In the office we have our own system of accounts, and we can teach him in a few days all that is distinctive in that system. He would be rather hindered than helped in acquiring this if he came to us with a formulated set of rules such as he would gain in the use of the school-book exercises. A sensible knowledge of the principles of arithmetic is of much more importance than the use of a number of book rules supposed to deal with practical business problems.

THERE has been so much written in the daily papers about Mr. Carnegie's great gift to the Scottish universities and so many contradictory statements made, that perhaps it may be worth while to outline the leading features of the scheme as given in the deed of trust. The trust is to be managed by an executive council of nine, who have the fullest power and discretion in

expending the income in the way they think best fitted to promote the two main objects: (*a*) to improve and extend the opportunities for scientific study and research in the universities of Scotland, and (*b*) to render attendance at these universities and the enjoyment of their advantages more available to the deserving and qualified youth of that country to whom the payment of fees might act as a barrier to the enjoyment of these advantages. Half the income is to be devoted to the improvement and extension of the universities of Scotland in the faculties of science and medicine, and to improving and extending the opportunities for scientific study and research, and increasing the facilities for acquiring a knowledge of history, economics, English literature and modern languages, and other subjects relating to a technical or commercial education. The other half of the income, or such part of it as is necessary, is to be devoted to the payment of the whole or part of the ordinary class-fees exigible by the universities from students of Scottish birth or extraction, or scholars who have given two years' attendance after the age of fourteen at state-aided schools in Scotland, or such other schools as are under the inspection of the Scottish Education Department. The committee may give additional financial aid to students who show exceptional merit, and may withhold payment of fees in the cases of students guilty of misconduct or who fail to pass the ordinary examinations of the university within a reasonable time. Extra-mural colleges, schools, or classes in Scotland, attendance at which is recognized as qualifying for graduation, are, on application, to be entitled to all the benefits of the scheme. The benefits of the trust are to be open both to men and women. The trustees have full power, by a majority of two thirds of their number, to modify the conditions under which the funds may be applied, having regard always to the purposes of the donor.

ONE of the most noteworthy events of the year in connection with secondary education was the holding of the first examinations of the Association of the Colleges and Preparatory Schools of the Middle States and Maryland. There was no advertising and no bidding for popular favor, but there was a dignity in the management and a fairness about the matter and manner of questions asked that will do much to inspire confidence in this great work. That the time has come for unification in college-entrance requirements is apparent to all who are engaged in the work of secondary education, and now, for the first time, there is a definite plan in working order which is submitted for criticism and suggestion. This has already had a good effect, for the New England Association, at its last meeting, appointed a committee to investigate the plan and report the possibilities for the colleges and schools of that section. The report has just been issued, and will be submitted at the annual meeting next month. The principal points of the proposed plan are as follows:

1. That the College-Entrance Examination Board consist of the President, or an authorized representative, of each college or university in New England which

maintains an examination system exclusively, or which is prepared to coöperate in substituting an examination system for the certificate system, and of [five] representatives of secondary schools in New England, the latter to be chosen annually by the New England Association of Colleges and Preparatory Schools, or in such manner as the Association shall direct.

2. That the Board elect a chairman, a vice chairman, a secretary, and a treasurer, the last two of whom need not be members of the Board.

3. That the Board choose annually an executive committee of five members, including at least two representatives of the secondary schools, said committee to have such powers and duties as the Board may from time to time determine.

4. That the work of the Board be confined to the conduct of written examinations and to matters directly incident thereto, including the preparation of such a schedule and division of examination subjects as shall meet, as nearly as possible, the various requirements of the several colleges participating.

5. That not later than December of each academic year, the Board designate, for each subject in which it is proposed to hold an examination, a college teacher to act as chief examiner, and two additional college teachers to act as associate examiners, and fix their compensation; that the examiners so appointed prepare examination questions in the several subjects, to be used at the annual examinations to be held under the direction of the Board; that differences in the requirements of different colleges be recognized by a subdivision of the subjects in which the papers are set, rather than by separate ratings on the same paper; that when the several examination papers shall have been agreed upon by the respective groups of examiners, they be submitted for approval or revision to a committee consisting of the chief examiners and representatives of the college members of the Board; and that the action of this committee of revision be final.

6. That not later than May of each academic year, the Board appoint a staff of readers to read and mark the answer-books offered at the examinations, and fix their compensation; and that both college and secondary-school teachers be eligible for such appointments.

7. That the examination papers be transmitted, as soon as approved by the committee of revision, to the secretary of the Board, and be printed and distributed, under his direction, to such examination centers, and in accordance with such regulations, as the Board may from time to time determine.

8. That the examinations be held at such times, in such places, and under such regulations as the Board, or its executive committee, may from year to year determine.

9. That immediately on the completion of the examinations, the answer-books be transmitted, in sealed packages, to the secretary of the Board, who shall assign them for reading and marking to such readers as the Board may have chosen; that the books in each subject be read under such conditions as will admit of repeated consultation among the readers: that the answer-books, together with the mark assigned to each, be returned by the readers, within one week after their receipt, to the secretary of the Board, who shall thereupon prepare and issue to each candidate a certificate setting forth the name, residence, and age of the candidate, the name of school last attended, or, if privately taught, the name of the last teacher, the subjects in which examinations were taken, the mark assigned in each subject, and the place and date of the examination; that the certificates issued be valid without limit of

time; and that the marks in each subject be sent to the school or teacher upon request.

10. That answer-books be marked on a scale including not less than five divisions; that a definite "pass" mark be fixed, but that no book falling below that mark be finally marked until it has been passed upon by two readers; that no revision of any answer-book be made after its mark has been reported to the secretary of the Board; and that all books be kept for two years, subject to being sent, at any time within that period, at the request of the candidate, to any designated college.

11. That before admission to examination in any year, each candidate be required to pay a fee of five dollars, and be given a receipt therefor; that the amount of such fees, together with the answer-books and a correct list of the candidates, be transmitted to the secretary of the Board, the fees to be by him paid over to the treasurer.

12. That salaries, bills, and other claims against the Board be paid by the treasurer on the order of the chairman of the executive committee.

13. That the Board be given power to amend its plan of organization by a two thirds vote of those present at any meeting, provided that due notice of the proposd change be given in the call for the meeting.

This is fundamentally the plan of the Association of the Middle States and Maryland, but so changed as to incorporate the views of the committee regarding certain points that will make it more in accord with the traditional procedure of the colleges of New England.

The committee offer also an alternative plan, which seems to them to be capable of as easy and effective administration as the other, but which gives the college the direct control over its own examinations. The first seven sections are the same as in the first plan, as also are the twelfth and thirteenth, but the sections eight to eleven are amended to read as follows:

8. That immediately on the completion of the examinations, the answer-books be transmitted, in sealed packages, to the various colleges, according to the directions given by the individual candidates.

9. That each college read and mark the answer-books of its own candidates, and transmit the results to the candidates directly, to the secretary of the Board, and, upon request, to the school or teacher.

10. That every answer-book be preserved by the college first receiving it for two years, unless before the expiration of that time the candidate, or his representative, shall direct that the book be sent to the authorities of some other college.

11. That before admission to examination in any year, each candidate be required to pay a fee of five dollars, and be given a receipt therefor; that the amount of such fees, together with a correct list of the candidates, be transmitted to the secretary of the Board, the fees to be by him paid over to the treasurer; and that any surplus from the amount thus received, after the payment of the examiners' fees and other necessary expenses of the Board, be divided each year among the colleges according to the respective numbers of their candidates in that year.

The committee conclude their report by making the following recommendations:

1. That the New England Association of Colleges and Preparatory Schools declares itself in favor of requesting the colleges to establish a New England College Entrance Examination Board.

2. That the Association, reserving for separate consideration the policy that should be adopted relative to the reading, marking, and acceptance of answer-books, commend to the colleges so much of the first plan herewith presented as does not involve this policy.

3. That, for the present, the function of reading the answer-books and acting thereon be retained by the colleges, the question of the transference of such function to the Examining Board being reserved for later consideration by the Colleges.

In connection with the third recommendation the committee beg to say that they are agreed that the policy of intrusting the reading, marking, and acceptance of answer-books to a central examining board is desirable provided ways can be devised of giving due recognition to such factors in the candidate's preparation and work as are not likely to be regarded in an examination of a formal and impersonal character. In view, however, of differences of opinion and only as to the wisdom of developing such a duty upon the Board at the start, but also as to the practicability of securing the establishment of a College-Entrance Examination Board at all on the basis of such a grant of power, the committee limit themselves to the recommendation as given.

4. That the Association appoint a committee empowered to represent the Association in any conferences that may be held between the colleges and the preparatory schools, in case the participation of the Association in such conference shall be desired.

BOOK REVIEWS

A FEW MATHEMATICAL TEXT-BOOKS

IT is, perhaps, not expected that a review for American teachers should dwell at any length upon foreign works. If so, it is unfortunate, since it is to the continent of Europe that we must still look for the most inspiring, at least for most of the inspiring, text-books on mathematics. One of these is Dr. Böger's work on projective geometry, the latest addition to the Sammlung Schubert.[1] While the subject has as yet no place in the American secondary school, and not much of a standing in the college, it is becoming so prominent that high-school teachers can no longer afford to be ignorant of its scope and value. In English we have long been limited to the translation of Cremona, at least until the recent appearance of a translation of Reye's well-known work. A good text-book on the subject has, however, been much needed, and this want has been admirably supplied for German readers by Dr. Böger. He has, it is needless to say, followed Reye's presentation of von Staudt's theory, but has felt free to depart from it where there is a definite gain by doing so, as in the adoption of Thomas's definition of projective relations and in his treatment of imaginary elements. The distinguishing excellence of the book is its lucid style combined with its conciseness. Reye and Cremona are often prolix, as perhaps becomes the writers of treatises, but Böger projects the distinctive points of the theory upon the student's plane, even as he similarly treats the geometric points in space. The principle of duality plays its important part from the first, but the anharmonic ratio is not introduced until the reader is prepared for it through a considerable study of harmonic elements.

For one who cares for a scholarly but succinct presentation of the subject, this book will be found valuable.

Dr. Milne's latest arithmetic[2] is written in the style and with the purpose that characterizes his other works. The style is popular, and the purpose is to furnish an easy book that does not depart any more than necessary from the traditional. He gives the incorrect definitions of number, "Arabic" notation, multiplication, and similar terms that have become so familiar that most teachers have ceased to think about them. If we may judge by the number of problems under the various topics, Troy weight is more important than avoirdupois, and apothecaries' than Troy, all of which is quite discouraging to those who are endeavoring to eliminate from arithmetic the useless accumulations of the centuries. The exercises are, however, well graded, and not without interest, and herein lies the chief value of the book.

Mrs. Hornbrook's recent work[3] is much less traditional. It is true, however, that

[1] R. BÖGER, *Ebene Geometrie der Lage*, Leipzig, Göschensche Verlagshandlung, 1900, pp. 289, 5 marks.

[2] WILLIAM J. MILNE, *Intermediate Arithmetic*, American Book Co., 1900, pp. 219, price 30 cents.

[3] A. R. HORNBROOK, *Grammar School Arithmetic*, American Book Co., 1900, pp. 416, price 65 cents.

she gives the same incorrect definition of "Arabic" notation, and that the unexplained rule too often finds place, as in the treatment of the least common multiple, percentage, the divisibility of numbers, and proportion. Intended for the grammar grades, it very properly introduces the rudiments of algebra and of metrical geometry, and does so in a skillful manner. It does not seem, however, that the value of the simple equation is sufficiently appreciated in the treatment of proportion. The book separates the subjects of ratio and proportion by about two hundred and fifty pages, an interesting innovation. The former topic precedes the treatment of fractions, which suggests a valuable, though often overworked, educational idea; this idea, however, seems to bear no fruit in the discussion. The book contains much that will appeal to good teachers as of value, especially in the questions at the beginnings of the various chapters. The weak features of the work are the unnecessary use of arbitrary rules and principles, and the monotonous arrangement of the discouragingly long lists of problems.

Somewhat more pretentious in title, but less valuable in fact, is Hall's little work on commercial arithmetic.[1] The book is written with the honest desire to present the most necessary parts of commercial arithmetic as it is found in America today. For this it is to be commended. The introductions to the chapters on stocks and bonds, banking, and exchange are valuable. But much of the rest of the book is open to such serious criticism as to make it certain that it will not be favorably received. The lower stratum of teachers will not use it because it attempts to be modern, and the upper stratum will not because of its faults. It is careless in its statements, as in its confusion of rate and rate per cent., in saying that the rate "has to be changed to a decimal before the problem can be solved," in asserting that a decimal fraction has to be transformed to become a rate, and in saying that 5 per cent. interest means "0.05 or. every dollar," when it means 0.05 of any number of dollars. The product of two abstract numbers often appears in step form, as a concrete number, and there is a general carelessness in the matter of symbolism of this kind. Rules abound, often as formulas, and usually with so little explanation as to make their presence a source of danger. The book is divided into two parts, the first containing subjects not involving time, in which bonds are included, and the second those involving time, in which checks and sight drafts are explained, features that make one doubt the value of the division. Averaging of accounts takes more space than partial payments, a fact that may be justified on the score of difficulty, but certainly not from the importance of the subject.

With what pleasure does one emerge from the humdrum of the commonplace on getting hold of a book like Cantor's recent arithmetic of daily life.[2] It is with interest that we turn the leaves of a book on arithmetic by a professor in a German university, a man whose fame is world-wide in the line of the history of mathematics, and one whose name has always been connected, outside of Heidelberg, with the more advanced branches of the science. For many years, however, Professor Cantor has given, during the winter semester, a course of lectures upon political arithmetic for those interested in financial questions. The essence of these lectures is set forth in a

[1] GEORGE HALL, *The Common Sense of Commercial Arithmetic.* The Macmillan Company, 1901, pp. 187, price 60 cents.

[2] MORTIZ CANTOR, *Politische Arithmetik oder die Arithmetik des täglichen Lebens;* Leipzig: Teubner, 1898, pp. 136, price 1.80 marks.

book so small as to be carried in one's pocket, but so scholarly as to become at once a standard. Within less than a hundred and fifty pages may be found historical and highly scientific discussions of simple and compound interest, probabilities and their applications in state lotteries (not uncommon abroad) and in the various forms of insurance, the computation of dividends, and other matters of finance as found in the real business life of this generation. It would do much good to those who still cry out for the disciplinary value of allegation, equation of payments, and compound proportion, to read a book of this kind and see the genuine discipline of genuine business. It would hasten the time when the problems of arithmetic would belong to the current generation, and this would be a novelty in education.

Professor Downey's *Higher Algebra*[1] is disappointing. A higher algebra today ought to mean more than Robinson's *University Algebra* of a generation ago, or Day's book of still an earlier generation. But while we find here one of the best pieces of book making that its publishers have recently produced, the matter is no particular improvement upon that of the books mentioned. Why should a "higher algebra" of today set forth a rule for every operation? Is modern pedagogy so wrong as to justify this reaction? Surely the world's great writers of today take the other view. At least it must be admitted that a rule requiring twenty-three lines for its statement can hardly be called "a *convenient* rule for this operation." (Horner's synthetic division.)

The author, too, lays himself open to serious criticism in his definitions. His *algebraic sum* seems to exclude the case of zero; his *algebraic difference* will hardly appeal to a student as lucid; the definition of *multiplication* excludes operations with irrational numbers; that of *degree* makes $a^{\frac{1}{2}} b^{\frac{1}{2}}$ of the first degree; that of *division* allows of a zero divisor; and that of *factor* $\sqrt{x-1}$ as a factor of $x-1$.

It must be admitted, too, that the demonstrations are very unsatisfactory. They might pass for a beginner's book, but not for a "higher algebra." The demonstration of the "rule" for subtraction is generally discarded today as begging the question, while that concerning the law of exponents in division is even more open to criticism. If these were isolated cases the book might be commended: but they are not, and their frequency justifies the remark that the book is disappointing.

A satisfactory presentation of the fundamental principles of non-Euclidean geometry, in succinct form, has long been desired by English readers. There have been any number of fugitive articles and brochures, but a convenient handbook to the subject has been wanting, and this want Professor Manning, of Brown University, has undertaken to fill.[2] On the whole this has been satisfactorily done. This does not mean that an exhaustive treatise has been attempted, or that any originality has been shown, save in the arrangement of matter; but a readable primer of the subject has been prepared, setting forth as much of the theory as most teachers will care for.

The arrangement is a convenient one. Recognizing that the denial of Euclid's postulate of parallels as *a priori* true leads to three possible geometries, the author seeks first to prove the fundamental propositions common to all three. He then proceeds to consider the two non-Euclidean geometries, the hyperbolic and the elliptic, in both two and three dimensional spaces. The work concludes with a brief historical note.

[1] JOHN F. DOWNEY, *Higher Algebra*, American Book Co., 1900, pp. 416, price $1.50.

[2] HENRY PARKER MANNING, *Non-Euclidean Geometry*. Ginn & Co., 1901. Pp. 95.

Our indebtedness to Dr. Manning may make it seem ungenerous to call attention to matters that will strike the reader unfavorably. Teachers are apt, however, to look upon books of this kind as models, and hence a word of caution is necessary. It is unfortunate that the author fails to distinguish between line and line segment, a distinction that would simplify the phraseology in several places. That "angles are measured by arcs" may be allowed for brevity in elementary text-books, but it hardly has place in a work like this. So the statement that "from any point without a line a perpendicular to the line *can be drawn*," followed by a proof that such a line merely exists, shakes one's confidence exactly as would a theorem stating that a regular heptagon can be inscribed in a circle, it being understood that the usual limitations of plane geometry are imposed. There is a similar statement regarding the drawing of only one such perpendicular. It would be difficult to understand what the author means by "the angles at the extremities of two equal perpendiculars," if he did not give a figure, and the lack of a definite order of letters in reading angles sometimes strikes the reader as unfortunate even where the figures are given. The rather antiquated forms, *hypothenuse* and *diedral*, are, of course, allowable; but the reason for the unusual factorial symbol (p. 59) is not so apparent.

The historical note is possibly extended enough for the purpose. The author has not consulted the standard works upon the subject, however, and his bibliography does not pretend to be complete.

DAVID EUGENE SMITH

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Experimental Psychology; A Manual of Laboratory Practice, Volume I, Part I, Student's Manual, price $1.60; Part II, Instructor's Manual, price $2.50. By EDWARD BRADFORD TITCHENER. New York: The Macmillan Company, 1901.

TEACHERS will be interested and pleased to find that Professor Titchener has set himself definitely to provide a text-book that shall be teachable. He has in fact taken infinite pains to aid instructors in the direction of a course in psychology, and to secure in students what he regards as the right attitude toward the course in all its details. The *Instructor's Manual*, of about 450 pages, is filled with references to psychological literature, descriptions of apparatus, details concerning the experiments; in fact, with such an outfit of knowledge concerning the course (reaching even to sixteen sets of examination questions) as a painstaking instructor might gather for himself in five or ten years' experience. The directions in the student's manual are detailed, clear, and precise. Any instructor who makes it the aim of a laboratory course to give students knowledge of the facts about our feelings of material objects and their relation to physical processes, and to train them in introspection and in the analysis of such feelings into mental elements, will undoubtedly find a use for Professor Titchener's Manual, in whole or in part.

But to say that he has done exceedingly well the thing he set out to do is not to agree that it is the best thing to do. Some, perhaps many, would propose a quite different aim and treatment for an elementary laboratory course in psychology. A majority of students of psychology are in professional schools for teachers. Is this sort of a course the best for them? The same question may be applied to students of

medicine, of sociology, of philosophy. Moreover there is in all intelligent people a strong interest in human nature that manifests itself in zeal for literature and history. Psychology, the science of human nature, should meet this interest and refine and direct it. Professor Titchener has chosen to disregard the great majority of our mental activities and to view the few under only two narrow aspects, relationship to physical stimulus and analysis, with the single professed aim of teaching students to introspect.

This willful restriction deprives the course of several desirable opportunities, to teach, for instance, (1) that human mental life is continuous with that of the lower animals; (2) that our feelings are not duplicates or mimics or parallel symbols of the outside world, but only reactions to it, selected because of their utility; (3) the fact of variation in function due to the presence of different combinations of elementary factors; (4) the fact of correlation of functions; (5) the application of exact and verifiable methods of study to human thought and behavior in general. These and many other ideas and habits of prime importance untouched in Professor Titchner's course can be acquired by direct experiment and observation. They fit a person well for the scientific study of human nature. The heritage of psychology today comes from philosophers, medical men, physiologists, biologists, statisticians, proverb makers, poets, and gifted students of human nature everywhere as truly as from the recent investigators of the nature and conditions of our feelings of objects. The last-named sources furnish perhaps the least valuable matter for either culture or discipline in an elementary course.

Besides failing to satisfy teachers who wish their students to verify experimentally the broader facts of mental life, Professor Titchener's manual may meet the disapproval of those who agree with him in choice of subject-matter, but deny the validity of an analysis of mental states into elements.

The efficient way in which Professor Titchener has worked out the sort of experiments he advocates puts upon all objectors the burden of constructing an equally good course in harmony with the aims they prefer.

E. L. THORNDIKE

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NEW PUBLICATIONS

EDUCATION, PSYCHOLOGY, AND PHILOSOPHY

The Education of Teachers. By W. H. Payne, University of Nashville. Cloth. Price, $1.50. Richmond, Va.: B. F. Johnson Publishing Company.

The Limits of Evolution and other Essays. By G. H. Howison, University of California. Size 7¾×5¼ in.; pp. xxxv+396. Price, $1.60. New York: The Macmillan Company.

Proceedings and Addresses of the Southern Educational Association, Twelfth Annual Meeting held at Richmond, Va. Size 9×6 in.; 380 pages. Published by the Association.

First Annual Report of the Public Schools of the Island of Cuba. Vol. I. Size 9½×6½ in.; 160 pages. Matthew E. Hanna, Commissioner, Cuba.

ENGLISH LANGUAGE AND LITERATURE

Specimens of the Short Story. Edited by George Henry Nettleton, Yale University. Size 6½×4½ in.; pp. vi+229. New York: Henry Holt & Co.

Goldsmith, Gray, Burns. Edited with Biographies and hints for teaching. Standard Literature Series. Paper. 86 pages. Price, 15 cents. New York: University Publishing Company.

Tennyson's Idylls of the King. Edited by William T. Vlymen, Eastern District High School, Brooklyn. Size 6×4½ in.; pp. xvii+319. Price, 25 cents, New York: The Macmillan Company.

Longman's Pictorial Geographical Readers. Book I. Size 7½×5 in.; 160 pages. Price, 36 cents. New York: Longmans, Green & Co.

The Quincy Word List; six thousand words graded for elementary schools. By Frank E. Parlin, Quincy, Mass. Size 7½×5 in.; 108 pages. New York: The Morse Company.

The Provençal Lyric. By Lewis F. Mott, College of the City of New York. Size 7×5 in.; 57 pages. Price, 75 cents. New York: William R. Jenkins.

French and English Dictionary. By Hjalmar Edgren, University of Nebraska, and Percy Burnet. Size 9×6 in.; pp. xiv+1252. New York: Henry Holt & Co.

The Rape of the Lock, An Essay on Man, and Epistle to Dr. Arbuthnot. By Alexander Pope. Edited by Henry W. Boynton. Riverside Literature Series. Paper, 105 pages. Price, 15 cents. Boston: Houghton, Mifflin & Co.

The Courtship of Miles Standish, and other poems. By Henry Wadsworth Longfellow. Introduction and Notes by George Armstrong Wauchope, South Carolina College. Size 7½×5 in.; pp. xliv+142. New York: University Publishing Company.

New Lessons in Language. A book for intermediate grades. By Gordon A. Southworth. Size 7½×5½ in.; 201 pages. Boston: Thomas R. Shewell & Co.

The Blaisdell Speller. Book I. By Etta Austin Blaisdell and Mary Frances Blaisdell. Size 7½×5 in.; 96 pages. Price, 16 cents. New York: The Macmillan Company.

The Blaisdell Speller. Complete. By Etta Austin Blaisdell and Mary Frances Blaisdell. Size 7½×5 in.; 208 pages. Price, 25 cents. New York: The Macmillan Company.

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